

MARINE REVIEW.

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Ore Sales—Lake Freight Matters.

Purchases of old range ores by the Carnegie Steel Co. aggregate about 400,000 tons, while those of the Illinois Steel Co. aside from ore carried over on last year's contracts, are of about an equal amount. This has no reference, of course, to Mesabi ores, which the big companies will use far more extensively than in the past, and which in the case of the Carnegie company are provided for by the Rockefeller contract. The Illinois company's purchases of Mesabi from the Minnesota Iron Co. are said to aggregate about 600,000 tons, making in all about 1,000,000 tons of new ore for the western concern. The Carnegie company's purchases of 400,000 tons of old range ores are said to represent about 25 per cent. of their requirements, if the several big plants which they own are to be operated in full. The purchases of the Illinois company are also limited, and other furnace concerns have bought only sparingly, so that it must be said that a waiting disposition still prevails in the ore business as in all branches of the iron and steel industry. Ores purchased by the Carnegie company are to come mainly from the Chandler, Minnesota and Norrie mines, while those of the Illinois Steel Co., aside from their Mesabi contract, are confined to the Marquette and Menominee ranges, and will be moved through Escanaba. As far as can be learned, the Norrie company is not represented in the sales made at Chicago, and as their portion of the Carnegie sales is not very large, it is not surprising that their mining force has been cut down within the past week.

The announcement of these sales caused vessel men from different parts of the lakes to visit Cleveland during the past few days, in an effort to close up lake freight contracts, but they found that such ore as had been sold was controlled almost entirely by companies that have large fleets of vessels to provide for, and the few contracts that were secured by vessels that have no ore connections are hardly worth mentioning. One Cleveland shipper engaged three vessels to move 50,000 tons of ore from the head of the lakes to Toledo, running through the season, at 70 cents, and it was announced from Chicago that, as a result of a very low rate made to the Illinois Steel Co., the vessels controlled by C. W. Elphicke of that place had also been taken for the season, Escanaba to South Chicago. These are the only contracts that have been made, aside from engagements covering the vessels of the ore companies. It is expected, however, that before the close of the present week quite a little business will be done at 60 cents from the head of the lakes to Sept. 1, as two shippers who have options at this figure have expressed their intention to cover as much ore as possible on the short season plan. No season engagements from Escanaba are talked of as yet, and the only additional contract reported from Marquette is that of the Christie and Sonsmith for four trips with coal to Portage at 25 cents and return cargoes of ore at 50 cents. The wild ore rates now fully established are 60 cents from the head of the lakes, 50 cents from Marquette and 40 cents from Escanaba, but cargoes have been very scarce even at these figures.

The increased draft from Lake Superior, which has admitted of vessels of ordinary dimensions carrying 400 to 700 tons more freight, each trip, through the Sault river this spring, than was carried a year ago, is a big factor in the freight situation. It is this increase of carrying capacity that has caused a large number of vessel owners to seek 70-cent ore contracts. They would have no difficulty in securing such contracts, if the coal and ore trades were not held back by a hand-to-mouth policy on the part of all buyers. Ore shippers are all disposed to cover their sales by lake freights as rapidly as it is possible for them to do so. They realize that practically a full month of the season has passed with only a small portion of the lake fleet in commission, and they also seem to understand, more readily than some vessel owners, that every day of delay is acting to the disadvantage of the shipper and in favor of the vessel owner. The producer of ore has made a price on his product and this price has been based on very low lake freights. Each day of delay in moving ore brings further probability of increased lake freights, and this is why several of the leading ore sales agencies have, within the past few days, sent

out letters of a most urgent kind to their customers, pleading with them to do everything in their power to move ore from Lake Erie docks and otherwise do what they can to avoid crowding the business of the season of navigation into less than six months, instead of seven or eight in ordinary years.

A British View of It.

Within the past few months English newspapers and trade journals have been filled with articles discussing the effort that is being made in this country to have congress adopt some measure of assistance for American shipping. The following from the London Times is a sample of what is being written on the other side:

"As matters at present stand the United States is a very long way indeed from the realization of its ambition to obtain a more commanding place in the carrying trade of the world. It does not, however, follow that that aspiration is impossible of attainment, and it is worth while looking for a moment at the conditions that would have to be met in order to enable such a purpose to be fulfilled. From a purely commercial point of view, the rivalling of the British marine is not so difficult as it might appear. If we take the value of steam shipping at the current year's rate, about £6 per ton, it would follow that the aggregate value of the British marine of twelve million tons would be approximately seventy-two millions sterling, and the building of a merchant navy at that cost is not likely to be impossible to a nation that has carried out a system of railroad transportation the cost of which is estimated at over 2,000,000,000 sterling, or about thirty times as much, including, of course, the loans raised and the stock created. The question that most urgently calls for solution is, what would the United States be likely to do with the merchant navy so provided after it had been called into existence? Would it be likely to take from the British marine any considerable part of the world-wide commerce that has planted the Union Jack wherever trade is carried on? Such a result could only happen if the one country had a better mercantile system, a more effective personnel, a lower working cost, a more extended trade of its own than the other. Is it probable that the United States, as now situated, would be likely to fulfill these conditions, even if the possibility of being able to secure the same varied, powerful and efficient fleet, from the mere tonnage or carrying capacity point of view, were granted? The latter is, of course, a large assumption, and one that is hardly likely to be realized in view of the difficulties that would certainly attend the economical administration of the service, if created. America, moreover, could not construct even an ocean tramp at £6 per ton, although that price has been common in our own country during the present year; and if, as is likely, the cost were nearly double that amount, the higher rate of interest on the original investment, which such a difference would involve, must suffice, even if the other necessary conditions be fulfilled, to deprive American tonnage of any prospect of successful competition with our own. While, therefore, it would be a rash thing to assert that the American merchant navy will never seriously compete with the British marine, it is safe enough to assume that the Union Jack is not likely to have anything to fear from the Stars and Stripes, for a long time to come."

A vest pocket pamphlet, just issued by the Marine Review, contains appointments of captains and engineers for 172 fleets of vessels owned on the lakes. It is practically a complete list of vessels, owners, captains and engineers on the lakes, corrected to date and put in the most concise form that it is possible to arrange the several thousand names contained in such a collection. It is neatly bound and durable. Mailed to any address on receipt of \$1.

Now that the Lake Ontario grain movement will be increasing, masters will want Lake Ontario general chart No. 61 and coast chart No. 1, as well as St. Lawrence river charts Nos. 4, 5 and 6. The five will be sent by the Review to any address by express for \$2.

More Suggestions for Gas Buoys.

Mr. Charles Paine of Buffalo, general manager of the Union Steamboat Co., has consulted masters of vessels in his line and suggests, through Secretary Keep of the Lake Carriers' Association, a list of places where gas buoys would be desirable. In view of an appropriation of \$25,000 for these buoys, which will be forthcoming shortly, the association has under consideration a long list of places where the buoys would be of advantage, and distribution will be made in accordance with the number of recommendations in each case. Mr. Paine suggests the following locations, a few of which are, however, already covered by the buoys: Middle island, Lake Huron; Cheboygan point, Straits of Mackinaw; Nine-Foot shoal, Lake Michigan; Death's Door, Lake Michigan; Fisherman's Shoal, Lake Michigan; Seneca shoal, Lake Erie; Sand point, Lake Michigan; South Fox Reef, Lake Michigan; Lansing shoal, Lake Michigan; Poverty island shoals, Lake Michigan; Gravelly island shoals, Lake Michigan; north side of channel, entrance to Erie harbor, Erie, Pa., Lake Erie; lower end of Stag island, St. Clair river; head of Port Huron middle ground; Point au Barques reef, Lake Huron; Ottawa point, Lake Huron; North point, Lake Huron; Major's shoals, Straits of Mackinaw; North and South Graham shoals, Straits of Mackinaw; Waugoschance sixteen-foot shoal; a newly discovered shoal about 1½ miles in a south-easterly direction from Gray's reef lightship; Boulder reef, Lake Michigan; Hog island reef, Lake Michigan; South Fox island, inside shoal, Lake Michigan; Hyde Park outer shoal, Chicago; South point, Milwaukee; Outer shoal, Pilot island passage; Drisco shoal; Little Bay de Noque shoal; east end of Whaleback shoal; Horseshoe reef; Strawberry channel; Quarry point in Sturgeon bay; also that the association should use its influence to have the Canadian government place a light at Point Abino, Lake Erie.

The Experimental Tank at Washington.

The experimental tank which is to be constructed at Washington by the navy department for trials with models of new ships will be the largest basin of its kind under cover in the world. Its dimensions will closely approach those of some of the largest dry docks, and the depth will be sufficient to float many of the smaller ships of the navy. On all sides it will be covered, and the water will be supplied by the city reservoirs or pumped from the Potomac river. From end to end the tank will be just 500 feet long and 50 feet across, and inside the water space will be 475 by 43 feet. Its depth will be 14 feet. Running across, close to the water, will be a carriage upon which there will be attached a dynamo meter to register the resistance due to towing a model through the basin. Models, varying in size from 10 to 20 ft, of every new ship to be built will be attached to this machinery and drawn through the water. The wave motion will be observed and the resistance it offers will be calculated. The models will be plain affairs, constructed only with a view to presenting closely the actual lines of the ship it is proposed to build. Through the experiments it is estimated that the plans of all proposed vessels can be improved and valuable information gathered for use in designing the lines of ships. The cost of the tank will be \$100,000.

Atlantic Was Sunk in 1852.

Editor Marine Review:—I notice a statement from a correspondent in your issue of April 15 to the effect that the steamer Atlantic was sunk in 1854. I beg leave to correct this statement by saying that the Atlantic was sunk in August, 1852. The reason that I am positive is that my father came up on the boat from Buffalo to Detroit in August, 1852, on his coming from Germany, and she was sunk on the next trip up.

Herman G. Runge.

Franksville, Wis., May 5, 1897.

Considerable interest will attend the official trials of the new gunboats Wheeling and Marietta, which will take place at San Francisco about the middle of this month, as one of them has Babcock & Wilcox water tube boilers and the other has Scotch boilers fitted with the Howden system of hot draft.

A list of country homes along the south shore of Lake Erie open to summer boarders will be mailed to any one enclosing a two cent stamp to B. F. Horner, general passenger agent of the Nickel Plate road, Cleveland, Ohio.

54 Jul 15

Important Admiralty Matters.

Owners of Canadian vessels on the lakes sometimes go far away from home to settle legal disputes. C. E. Kremer of Chicago and Harvey D. Goulder of Cleveland are to try a case in the U. S. district court at Duluth shortly, in which both vessels are owned in Canada, and the accident for which damages are claimed occurred in the Welland canal. The case is that of the Marine Insurance Co. against the steamer Arabian. The insurance company with other underwriters paid the Montreal Transportation Co. some \$15,000 for damages sustained by their vessel, the Minnedosa, through disturbance in the canal caused by the Arabian crashing into and breaking one of the canal lock gates, and they are now trying to recover from the owners of the Arabian.

The case of the Umbria, decided by the United States supreme court a few weeks ago, brings out some important points as to the "probable profits of a charter" entering into the liability of a vessel that may be at fault for collision. It was sought in this case to charge the vessel at fault with the "probable profits for charter" made about a fortnight before the collision. The court said: "There is nothing in the peculiar facts of the case to take it out of the general rule that in cases of total loss by collision, damages are limited to the value of the vessel, with interest thereon, and the net freight pending at the time of the collision. The probable net profits of a charter may be considered in cases of delay, occasioned by a partial loss, when the question is as to the value of the use of the vessel pending her repairs."

* * But in cases of total loss, the probable profits of a charter, not yet entered upon, are always rejected. * * * In cases of a partial loss, there is no injustice in allowing the probable profits of a charter for the short time during which the vessel is laid up for repairs, but in cases of a total loss the recovery of such profits is limited to the voyage which the vessel is then performing, since, if the owner was entitled to recover the profits of a future voyage or charter, there would seem to be no limit to such right so far as respects the time of its continuance; and if the vessel were under a charter which had months or years to run, the allowance of the probable profits of such charter might work a great practical injustice to the owner of the vessel causing the injury."

Stocks of Grain at Lake Ports.

The following table, prepared from reports of the Chicago board of trade, shows the stocks of wheat and corn in store in regular elevators at the principal points of accumulation on the lakes, May 8, 1897:

	Wheat, bushels.	Corn, bushels.
Chicago	7,750,000	7,022,000
Duluth	4,770,000	23,000
Milwaukee	286,000	3,000
Detroit	90,000	8,000
Toledo	932,000	457,000
Buffalo	779,000	57,000
	14,607,000	7,570,000

As compared with a week ago, the above figures show, at the several points named, a decrease of 1,657,000 bushels of wheat and 1,033,000 bushels of corn.

An excellent chart of Green bay and approaches, on a large scale has just been published by the United States hydrographic office and may be had from the Marine Review. The chart is corrected to March 1, 1897, and takes in with Green bay the west shore of Lake Michigan from Manistique to Kewaunee. It will be of great value to masters of Lake Michigan trading vessels, as well as the men in charge of the larger ore and coal carriers trading to Escanaba. Soundings are in feet and there is a scale of statute miles attached. The price is \$1.25, but the chart is so complete in detail that it is larger than the single sheet charts of Lake Superior or Lake Michigan.

The large single-sheet chart of Georgian bay, just issued by the British admiralty, was prepared from the surveys on which Staff Commander J. G. Boulton, R. N., has been engaged for several years past. This chart may be had from the Marine Review for \$1.75. The price is higher than is usually charged for navigators' charts, but this one takes the place of probably ten sectional charts and is corrected up to date.

Underwriters Interested.

THEY WILL TAKE PART IN THE WORK OF SECURING THE REMOVAL OF CHANNEL OBSTRUCTIONS—ASSISTANCE ASKED FROM THE VESSEL CAPTAINS.

Geo. L. McCurdy of Chicago, representing the syndicate of insurance companies that is carrying a big share of hull and cargo insurance on the lakes this season, has undertaken a work in which, it would seem, the underwriters should have been interested long ago. He proposes to secure from vessel masters, as far as it is possible to do so, reports of all sunken rocks, new shoals and other obstructions, and immediately take up with government officials the question of having such obstructions removed or properly marked. It is well known, of course, that the Lake Carriers' Association, through its committee on aids to navigation, of which Capt. Geo. P. McKay of Cleveland is chairman, has accomplished a great deal along this line in the past, but Mr. McCurdy proposes to assist the association by systematizing the work and by putting into the hands of every vessel captain blanks on which he may make reports of everything that will tend to decrease the number of accidents on the lakes. With this end in view, and with the idea of working in harmony with the Lake Carriers' Association, Mr. McCurdy a few days ago addressed the following letter to Capt. McKay:

Geo. P. McKay, Chairman Committee on Aids to Navigation, Lake Carriers' Association, Cleveland—Dear Sir:—I know that everybody connected with the insurance business of the lakes feels very grateful to you, and to all the executive officers of the Lake Carriers' Association, in fact, for the interest taken in securing and disseminating information regarding rocks, shoal spots, sunken wrecks, etc. I know also that it is very difficult to secure information of this kind from the vessel masters, but in the interest of my principals in the insurance business, I intend to lend a hand to the work of collecting information regarding shoal places, misplaced aids to navigation, etc., and through you I respectfully request a little assistance from your association. My plan is to send out blanks to all masters, asking them to give us such information along this line as may come to their attention at any time during the year. We would immediately take up with the United States engineers, or the officers of the light-house service, any reports of rocks in channels, new shoals, etc. and thus help you with this kind of labor. All we want from your committee is an endorsement, which we could send to the vessel captains with the blanks, and which would probably overcome any thought they might have of our efforts being in the nature of an insurance scheme. Our only aim is to help reduce, as far as possible, the number of accidents due to new shoals and unmarked obstructions of all kinds.

Royal Insurance Bldg.,
Chicago, May 9, 1897.

Geo. L. McCurdy.

Capt. McKay's answer to the foregoing communication was to the effect that the members of the committee heartily endorsed any effort of this kind on the part of the underwriters, especially if it was the intention to communicate with government officials upon the receipt of such information and assist in the great labor that is necessary to bring about the removal of such obstructions.

Mr. McCurdy, will now communicate with all captains on the lakes, furnishing them blanks upon which to submit the required information. In a letter to the captains, a copy of which has been submitted, he says: "It is my intention, in behalf of insurance interests on the lakes, to undertake the work of reporting to government engineers, and to officials of the United States light-house service, all information that it is possible to secure regarding new shoals, sunken wrecks, misplaced buoys, or obstructions of any kind. It is also the intention of the underwriter whom I represent to assist the Lake Carriers' Association and the government officials in calling attention to the existence of such obstructions and in endeavoring to have them removed when it is possible to do so. Your assistance is respectfully requested in this matter. Blanks are enclosed, and we ask you, in the interest of lake shipping generally to report groundings and anything in the way of hindrances to navigation that may come to your attention during the season. This work is undertaken in the interest of all lake vessels as well as that of the underwriters. Please save the blanks for use whenever you can give information regarding obstructions of any kind that may be avoided by other vessels."

Appointments of captains and engineers for 1897, vest pocket size, \$1.00. Order from the Marine Review, Cleveland, Ohio.

Affairs of F. W. Wheeler & Co.

A notable feat of financiering, which has been brought to a successful issue, is the acceptance by 90 per cent. of the creditors of F. W. Wheeler & Co. of West Bay City of bonds, running from two to seven years at 6 per cent. interest, for their claims. The acceptance of these bonds shows the esteem in which the company is held by its creditors. Although the amount of the bonds, \$250,000, is but a small part of the value of the West Bay City ship building plant, yet the prevailing distrust in business circles, and the condition in which the lake marine finds itself at the opening of navigation this year, are matters that do not make a work of this kind the easiest thing in the world.

Mr. Wheeler's health, which was in a precarious condition some time ago, has been entirely restored, and he is now hustling around for contracts with his old time vigor. The contract which he secured a few days ago for an ocean tug to go to New Orleans is the only contract of importance, excepting the two lake revenue cutters, that has been booked by ship builders on the lakes for some time past. Mr. Jno. S. Porter of Saginaw, who was elected treasurer of F. W. Wheeler & Co. the first of March, has taken hold of the financial affairs of the concern. This will give Mr. Wheeler more time to look after outside matters in connection with contracts and the work of the ship yard. This company is considering an offer of a bonus to move its entire plant to a thriving city in another state.

Lake Superior Commerce During April.

It is well understood, of course, that the commerce of both canals at Sault Ste. Marie during April was considerably lighter than in April, 1896. Comparative figures would, however, be of little importance as yet, and a statement of the commerce of the canals during the past month is therefore printed herewith without reference to the statement relating to the same month a year ago:

LAKE SUPERIOR COMMERCE DURING APRIL, 1897. REPORTS OF UNITED STATES AND CANADIAN CANALS.

EAST BOUND.

Items.	Designation.	United States Canal.	Canadian canal.	Total.
Copper	Net tons.....	4,837	.....	4,837
Grain.....	Bushels.....	1,246,500	.....	1,246,500
Building stone.....	Net tons.....	.....	.....	.....
Flour	Barrels.....	161,390	.....	161,390
Iron ore.....	Net tons.....	2,745	.....	2,745
Iron, pig.....	Net tons.....	.....	.....	.....
Lumber.....	M. ft. B. M.....	2,110	.....	2,110
Silver ore.....	Net tons.....	.....	.....	.....
Wheat.....	Bushels.....	2,240,271	37,300	2,277,571
Unclassified freight...	Net tons.....	334	.....	334
Passengers.....	Number.....	15	.....	15

WEST BOUND.

Items.	Destination.	United States Canal.	Canadian Canal.	Total.
Coal, hard.....	Net tons.....	12,496	4,400	16,896
Coal, soft.....	Net tons.....	44,974	4,400	49,374
Flour.....	Barrels.....	.....	.....	.....
Grain.....	Bushels.....	.....	.....	.....
Manufactured iron.....	Net tons.....	1,403	.....	1,403
Salt.....	Barrels.....	12,400	.....	12,400
Unclassified freight...	Net tons.....	7,895	1,281	9,176
Passengers.....	Number.....	16	25	41

East bound freight, net tons.....	120,794
West bound freight, net tons.....	78,709
Total.....	199,503
Total craft, United States.....	229
Total craft, Canadian.....	32
Total registered tonnage, United States.....	227,634
Total registered tonnage, Canadian.....	22,065
	249,699

Why not patronize the Nickel Plate road on your next trip to New York City or Boston. They operate solid through trains, elegantly equipped with palace sleepers, and fine day coaches attended by uniformed colored porters, whose duties require them to look out for the comfort of passengers. Magnificent dining cars. The popular low rate short line.

48 June 10

Around the Lakes.

Mr. C. F. Palmer, Cleveland vessel broker, is now located on the seventh floor of the Perry-Payne building.

Capt. Louis Charbonneau of Bay City died aboard his vessel, the Edward Blake, while on a trip down Lake Michigan, a few days ago.

The contract for dredging Collingwood, Ont., harbor has been awarded to Boon, Armstrong & Co. A very large dredge will be used on the work.

Capt. Wm. Dandy, who is among the old vessel captains of the lakes, was compelled to leave his command, the steel tow barge Aurania, in Chicago recently, on account of illness.

Officers of the Dominion cruiser Petrel are: Captain, Edward Dunn; first mate, A. J. Frame; second mate, F. Arnold Jarvis; chief engineer, A. J. Brown; second engineer, W. H. Linter.

Citizens of Racine, Wis., will make an effort to have the government build a breakwater out from the point of land known as Wind point, similar to that at Milwaukee, so as to form a harbor of refuge.

The Pembroke Navigation Co. has given an order to the Polson Iron Works, Toronto, for a small steel passenger steamer, to ply on the Ottawa river between Pembroke and Des Joachims, to be ready about July 15.

The schooner Wadena arrived in Cleveland, Sunday, after having received an extensive rebuild at the works of the Milwaukee Dry Dock Co. Repairs involved an expenditure of about \$7,500 and were very well made.

As a result of the recent race between the steamers Langell and Elfin-Mere while entering the canal at Duluth, the city authorities have passed an ordinance restricting the speed of vessels through the canal entrance to six miles an hour.

About May 15, the fixed red lantern light at the edge of the timber, near the lower end of Herson island, St. Clair river, will be moved nearer to Herson island middle light, making the distance between the lights about 525 feet.

Petoskey reports a mirage on Little Traverse bay, which developed Saturday. The Beavers and Skilligalee light-house point, thirty to forty miles distant, were clearly revealed in the befuddled atmosphere, the vision lasting nearly an hour.

Manager Foy of the Niagara Navigation Co. has appointed R. Clapp, first officer of the Chicora, to the captaincy of that vessel, in place of the late Capt. Harbottle, deceased. Captain Clapp has been with the Niagara company as chief officer since 1893.

Arthur H. Vogel of Milwaukee was the lowest bidder on a job of 50,000 yards of dredging in Fox river, Green Bay, for which Capt. Geo. A. Zinn of the United States engineer corps, Milwaukee, opened bids, a few days ago. The price was 9½ cents per cubic yard.

Vessels in the ore trade are avoiding trimming at shipping ports more so than usual this season. Some of the largest of them are either doing no trimming at all or they are trying different devices of cheap construction, which are intended to partly distribute the ore.

W. J. Connors of Buffalo stevedore fame seems to be going into daily newspaper business on a wholesale scale. He has owned the Buffalo Enquirer and the Buffalo Record for some time past, and a few days ago purchased the Buffalo Courier, which he has consolidated with the Record under the name of Courier-Record.

Industry and Prodigy are the names of the two big wooden harbor tugs, built by Capt. James Davidson, and which are to be in the Barry line at Duluth. Two other tugs of this line are the G. A. Tomlinson and Violet H. Raber. The Duluth company is known as the Barry Towing & Wrecking Co. Offices are at the foot of Fifth avenue, west.

The efficiency of the passenger service on the Nickel Plate road is meeting recognition on all hands. Solid through trains between Chicago and New York City; elegantly equipped palace sleeping cars; an unexcelled dining service uniformed colored porters on through trains; fast time and rates always the lowest; all combine to make it the most popular line between Chicago, Cleveland, Buffalo, New York and Boston.

49 June 10

Miscellaneous Matters.

The project to build a railroad from the Pittsburg terminus of the Pittsburg, Bessemer & Lake Erie Railroad to the Connellsville coke region is again under way. Engineers are making preliminary surveys, and work on the extension will begin as soon as the road is completed between Conneaut and Pittsburg.

Lieut. Frederick Enblom, an engineer from Stockholm, Sweden, is making a tour of the lakes for the purpose of investigating canal locks and ice crushing steamers in the interest of his government. In company with Mr. Frank E. Kirby of the Detroit Dry Dock Co., he examined in the big dry dock at Detroit, a few days ago, the ice crushing steamer Sainte Marie.

The new steel barge Constitution, built by the American Steel Barge Co., has left the ship yard at West Superior in tow of the steamer Victory. Her first cargo will be a load of ore from Ashland. The barge company is making extensive repairs to the steel steamer Katahdin. She is in dock having twenty-three plates taken off and sixty floors and frames fixed up.

The steel barge Antrim, which was launched at the ship yard of the Globe Iron Works Co. on Saturday last, and which will tow with the steamer Harper or Nimick, is a duplicate of the Sidney G. Thomas, launched at the same yard a short time ago. Both vessels were fully described and illustrated in the Review of April 29. Tonnage of the Sidney G. Thomas is 3,200.19 gross and 2,912.58 net.

Carlos D. Myers of Cleveland, who has been experimenting with diving apparatus intended for deep sea purposes, and who was connected with an expedition that tried to find the sunken Pewabic a year ago, now talks of fitting out a small vessel to go in search of the Menominee line steamer Norman, which was sunk in Lake Huron in August, 1895, by the Canadian Jack, a wooden steamer now known as the Bothnia.

Even the fuel docks are making records unheard of in the past in putting coal aboard steam vessels. The steamer V. H. Ketchum came into Cleveland just before midnight, Monday, dropped her tow inside the breakwater and proceeded to the fast plant of the Cuddy-Mullen company for fuel. Eight car loads of fuel, aggregating 155 tons, were put aboard in twenty minutes, and in just one hour after passing within the breakwater the steamer was again on her way up the lake with her tow.

The new coal plant of the Pennsylvania & Ohio Fuel Co. at Manitowoc, which is to be operated in connection with the Chicago & Northwestern Railway, has 800 feet frontage and is 400 feet deep. The framework of the trestles will be of iron, and in addition to this 500,000 feet of timber and planking will enter into the construction of the plant. The hoists will be of the most approved kind, so as to assure rapid handling of cargoes. It is intended to have the plant ready for service about August 1.

In view of the great number of aids to navigation which the United States government maintains on the lakes, and in the advantages of which Canadian vessels share alike with United States vessels, the officers of the Lake Carriers' Association do not hesitate in asking the Canadian marine department for lights that may be of advantage to American commerce. Just now it is the general opinion of vessel masters trading to Buffalo that a light and fog signal at Point Abino is badly needed, and the Lake Carriers' Association will very probably petition the Canadian government for a new structure at that point.

James R. Raymond of the Standard Automatic Releasing Hook Co., Nos. 22 and 24 State street, New York, who has been on the lakes for two or three weeks past, directing attention to the value of a patent hook that will admit of a naphtha launch, yawl or small boat of any kind being released in very rough weather and again taken aboard without the least difficulty, is meeting with success in the sale of his device at Chicago. The Goodrich line has equipped all boats on the Iowa and Virginia with these hooks, and the Chicago Ship Building Co. bought them for vessels which they are just completing, with the intention also of using them on all vessels which they build in the future.

Army and navy charts of the lakes are kept in stock by the Marine Review, Perry-Payne building, Cleveland.

Docking Loaded Ships.

Most managers of dry docks on the lakes are anxious to avoid, as much as possible, repair jobs that involve the docking of loaded vessels, and it is probable that the accident to the steamer Progress in Dunford & Alverson's large Port Huron dock, a few days ago, will cause them to be even more cautious in the future regarding work of this kind. At the last meeting of the association of dry dock companies, the question of increasing charges for loaded vessels was discussed and the subject will probably be brought up again at the next meeting.

The accident to the Progress brings up a complication of questions regarding liability for the vessel's injuries, loss on cargo, etc. While loaded in Cleveland, one of the steel canal boats ran into her, and it was found after proceeding up the lakes that it would be necessary to dock her on account of injury to her wheel. The Port Huron dock managers took a vessel out of dock to accommodate the loaded

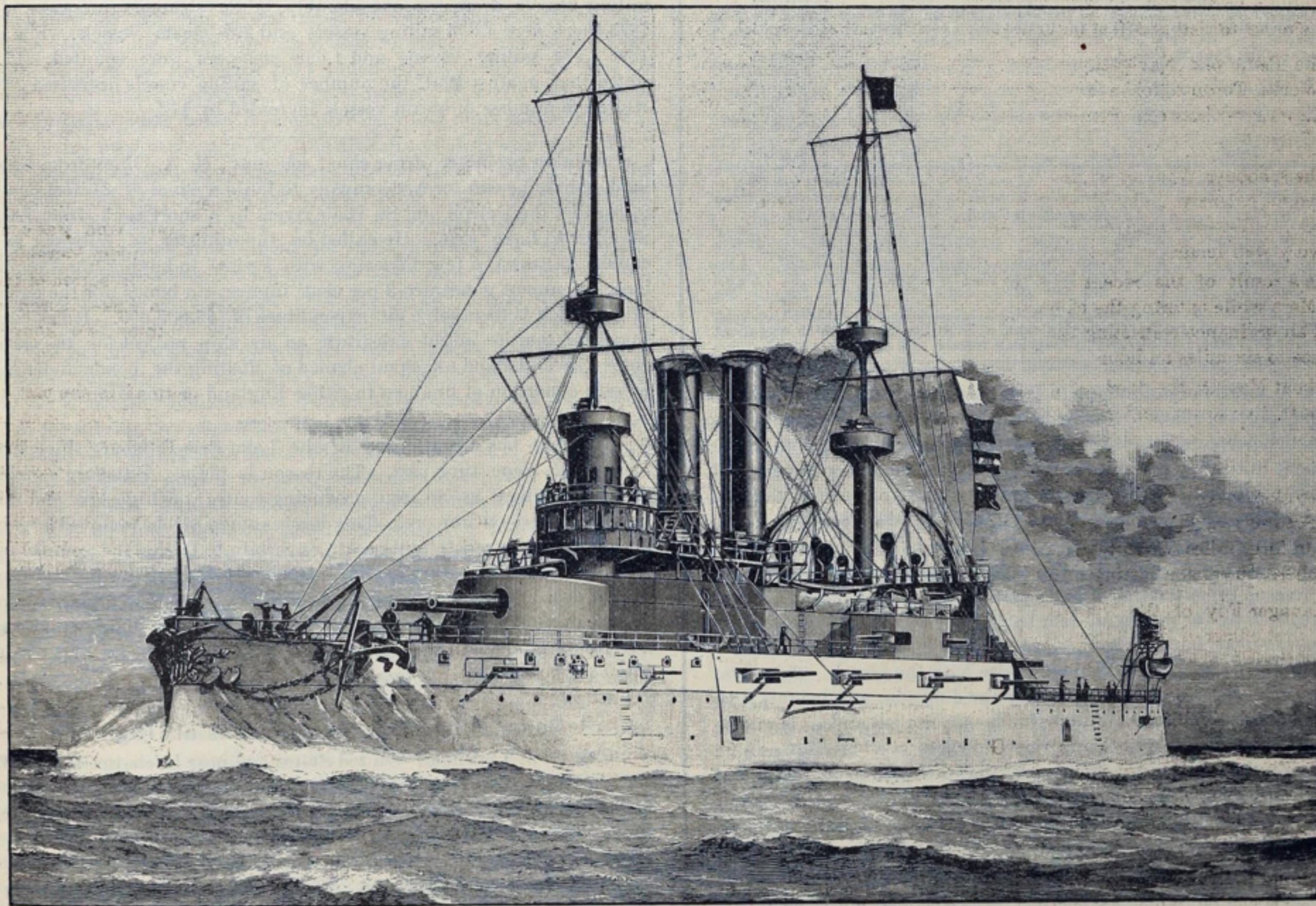
In General.

It is expected that the Wolvin steamer Empire City, building at the yard of the Cleveland Ship Building Co., will be launched during the first week in June.

The steamer Zenith City has just loaded 134,981 bushels of wheat and 50,500 bushels of rye at Duluth. The cargo is a very large one, but it is not a record breaker, as it foots up only 5,463 net tons, against 5,550 net tons of wheat moved by a sister ship, the Queen City, on a recent trip from Duluth.

Secretary Alger of the war department has finally approved of the plans of the Lake Shore Ry. Co. for a new bridge over the Ashtabula river at Ashtabula, to replace the structure destroyed by fire in November, 1895.

Amazon is the name selected for the steel tow barge which the Chicago Ship Building Co. is building for James Corrigan of Cleveland,



LATEST OF THE UNITED STATES BATTLESHIPS—KENTUCKY, KEARSARGE, ALABAMA CLASS.

Displacement, normal coal supply, 11,520 tons; length on load water line, 368 feet; extreme breadth, 72½ feet; mean draft, 26¾ feet; engines twin-screw, triple expansion; indicated horse power, 10,000; coal capacity, in bunkers, 1,210 tons.

ship, on which it was expected repairs would be made in a hurry. It was especially unfortunate, therefore, that some difficulty in the arrangements for docking the Progress should cause a shift in the vessel, which forced the shores through the side of the dock and allowed her to keel over and drop to the bottom of the dock. Immediately following the accident the dock was flooded and the vessel again taken out. Her entire cargo of 2,000 tons of coal was sold at Port Huron, although it was consigned to Lake Superior, and it will probably be found when she is again docked that she suffered additional injury on account of the accident attending the first operation. The Progress is owned by Mr. Alex. McVittie and others of the Detroit Dry Dock Co. but was under charter to C. R. Jones of Cleveland.

Located on the south shore of Lake Erie, contiguous to the Nickel Plate road, are many country homes that will accommodate summer boarders. Send to B.F. Horner, general passenger agent of the Nickel Plate road at Cleveland, O., and he will forward you a list on receipt of a two cent stamp.

56 Jul 15

but the barge building at the Globe yard, Cleveland, for the same owner has not been named as yet.

A cargo of 123,000 bushels of corn and 79,417 bushels of oats, aggregating 4,834 tons, was taken out of Chicago, a few days ago, by the new steel barge Carrington on a draft of 15 feet 6 inches. This is the largest cargo ever taken out of the Chicago river, but several cargoes of greater weight have been moved from South Chicago, the steamer Queen City holding the record from the latter port with 207,000 bushels of corn, which is equal to 5,796 net tons.

Upon leaving the employ of the American Steel Barge Co. at West Superior, a few days ago, Joseph Kidd, who has been connected with the company since its organization, was surprised by being called before an assembly, made up of managers of the works and the big force of employes, who presented him with a gold watch, chain and charm and a complete outfit of furniture, to be used in a new office, as he is to take up a consulting engineering business. The presentation speech was made by Capt. McDougall.



DEVOTED TO LAKE MARINE AND KINDRED INTERESTS.

Published every Thursday at No. 409 Perry-Payne building, Cleveland, Ohio,
by John M. Mulrooney and F. M. Barton.

SUBSCRIPTION—\$2.00 per year in advance. Single copies 10 cents each. Convenient
binders sent, post paid, \$1.00. Advertising rates on application.

Entered at Cleveland Post Office as Second class Mail Matter.

The books of the United States treasury department on June 30, 1896, contained the names of 3,333 vessels, of 1,324,067.58 gross tons register in the lake trade. The number of steam vessels of 1,000 gross tons, and over that amount, on the lakes on June 30, 1896, was 383 and their aggregate gross tonnage 711,034.28; the number of vessels of this class owned in all other parts of the country on the same date was 315 and their tonnage 685,204.55, so that more than half of the best steamships in all the United States are owned on the lakes. The classification of the entire lake fleet on June 30, 1896, was as follows:

	Number.	Gross Tonnage.
Steam vessels.....	1,792	924,630.51
Sailing vessels and barges.....	1,125	354,327.60
Canal boats.....	416	45,109.47
Total.....	3,333	1,324,067.58

The gross registered tonnage of the vessels built on the lakes during the past six years, according to the reports of the United States commissioner of navigation, is as follows:

Year ending June 30, 1891.....	204	111,856.45
" " " 1892.....	169	45,968.98
" " " 1893.....	175	99,271.24
" " " 1894.....	106	41,984.61
" " " 1895.....	93	36,352.70
" " " 1896.....	117	108,782.38
Total.....	864	444,216.36

ST. MARY'S FALLS AND SUEZ CANAL TRAFFIC. (From Official Reports of Canal Officers.)

	St. Mary's Falls Canal.			Suez Canal.		
	1895*	1894	1893	1895	1894	1893
No. vessel passages.....	17,956	14,491	11,008	3,434	3,352	3,341
Tonnage, net registered.....	16,806,781	13,110,366	9,849,754	8,448,383	8,039,175	7,659,068
Days of navigation.....	231	234	219	365	365	365

* 1895 figures include traffic of Canadian canal at Sault Ste. Marie, which was about 1/4 per cent. of the whole, but largely in American vessels.

Naval militia organizations in Detroit, Chicago and Cleveland are laying all sorts of plans to secure possession of old government ships for practice purposes, but it is probable that they will meet with disappointment until they can muster more influence than they have as yet at their command. The organization in Cleveland wants the old revenue cutter Andrew Johnson, which is to be abandoned by Capt. A. B. Davis and his crew after they take the new Gresham about June 1. Everybody would be pleased to see the old Johnson turned over to the reserve organization without cost, as the few thousand dollars to be realized by the sale is an item hardly worthy of consideration by the government, but the law requires the sale, and an act of congress would be necessary to do otherwise with the vessel. The naval reserves will, therefore, have to bid for the Johnson, and in this they will be at a disadvantage, as their funds are limited and it is understood that there are a number of vessel owners who are figuring on purchasing the old ship. What use they will make of her is not stated in any case. She has been appraised at \$5,000. Her boiler is in very good condition, and the machinery is also of some account, but the hull has been appraised at only \$1,000. Officers of the naval reserve in Michigan have succeeded in interesting Senators McMillan and Burrows in an effort to secure for the lakes the old wooden ship Yantic, which is soon to come around from the Pacific station. The Yantic's dimensions will admit of her passage through the St. Lawrence canals, but the Maryland naval reserve organization has also made a request for this vessel, and anyhow the question of objection from Great Britain to another war vessel being brought to the lakes must be given consideration.

There is no doubt of an earnest intention on the part of the present government in Canada to push through to completion before the spring of 1899 all dredging and other work necessary to give 14 feet navigation throughout the St. Lawrence canals. Mr. Blair, minister of railways and canals, has repeatedly declared his intention to take up this work where his predecessor left off, and push it to completion within the time noted. His earnestness in the matter is winning support from political opponents, as well as the people of his own party. A 14-foot channel for the entire length of the St. Lawrence river, in connection with the Welland canal, will certainly take from New York and other eastern points a large part of the export trade in grain, flour and other products that originates beyond the lakes, notwithstanding improvements in the Erie canal and the reduction that is going on in handling charges and rail freights.

Marine engineers of New York are evidently of the opinion that apprentices are securing licenses from steamboat inspectors in some parts of the country without having served the required time aboard vessels and that engineers are being made too fast. A provision in the steamboat regulations provides that applicants for licenses must file with their applications a written certificate as to the time of service from the licensed engineer under whom they served. The New York engineers have declared that these certificates are often given without regard to the fitness of the applicant, and they call upon engineers in all parts of the country to assist them in enforcing the rule strictly in the future.

Germany's merchant fleet counted on the 1st of January, 1896, 3,592 vessels, against 3,665 on the 1st of January, 1895, 4,257 in 1885, and 4,602 in 1875, the decrease against the last named year amounting to 1,010 vessels, or 21.9 per cent. The carrying capacity, on the other hand, rose since 1875 from 1,068,383 to 1,523,902 register tons for 1895, but in 1896 again went down to 1,502,044 tons. The number of sailing vessels decreases considerably, while steamers increase. In 1875 there were 4,303 sailing vessels and 299 steam vessels, while in 1896 2,524 sailing vessels and 1,068 steamers were counted. It is stated that, against 1891, the number of sailing vessels decreased 233, while the number of steam vessels increased by 172.

Another promoter of big canal schemes, H. A. Olney from England, thinks he can form a company to build a canal of 21 feet depth to parallel the Detroit and St. Clair rivers by a short route from Lake St. Clair to Lake Erie. He called on the minister of railways and canals at Ottawa, a few days ago, with a view to having the Dominion government guarantee 3 per cent. interest on bonds for the enterprise, which is to involve an expenditure of \$5,000,000. It has been suggested that he might substitute an air ship project for the canal enterprise and stand an equal chance of floating the bonds under the present condition of finances in either England or this country.

Nothing has been heard of the Lake Erie-Pittsburg ship-canal scheme for some time past. The reason is plain. Pittsburg's greatest disadvantage as an iron producing centre was high lake and rail freight charges on iron ore. This disadvantage will be removed largely by reductions in rail freights that are certain to follow the completion of the Carnegie ore railway, and the Carnegie-Rockefeller ore and lake freight deal has already brought prices of ore down to figures that were not dreamed of a few years ago. The Lake Erie-Pittsburg canal was never entertained as a serious proposition by Mr. Carnegie or any of Pittsburg's practical iron men.

Canal Operating Machinery is all Right.

Col. G. J. Lydecker, United States engineer in charge of the St. Mary's Falls canal, has deemed it advisable to answer newspaper statements about defects in machinery of the new Poe lock at Sault Ste. Marie. In a communication to the Review, date of May 7, he says: "Having noticed that several newspapers have published items relating to the Poe lock at Sault Ste. Marie, which convey grossly incorrect ideas concerning its operating machinery, I think that it will interest vesselmen to have a direct statement of the true condition of affairs, and therefore transmit to you the enclosed copy of letter from the general superintendent of the canal, believing that you will be pleased to publish it in the next issue of your paper."

The letter from Mr. E. S. Wheeler, general superintendent of the canal, which is referred to in the foregoing communication, is as follows:

Editor Marine Review.—The machinery of the Poe lock is and has been working in a very satisfactory manner since the opening of navigation. Last season there were some parts that proved to be too weak and wore out rapidly. During the winter these parts have all been made new and of stronger pattern. They are now and have been working well and there need be no apprehension among those using the canal that there will be any delay caused by the machinery.

E. S. Wheeler,
Asst. Engr. & Genl. Supt.

Sault Ste. Marie, Mich., May 5, 1897.

Several hundred photograph negatives of lake ships are held in stock by the Marine Review. Prints can be made on short order.

Illustration of Progress in Marine Engineering.

A striking illustration of progress in marine engineering is found in the new machinery placed in and designed for two notable American steamers, one a merchant ship and the other a war ship. The Louisiana of the Cromwell Line was built in 1879 and broke the record between New York and New Orleans. The Chicago was designed in 1882 and launched in 1884, and was much the largest of the four ships which constituted the beginning of our new navy. When the Chicago was designed our naval authorities had had little experience in building modern marine engines, and the triple expansion engine was an experiment. Therefore the speed of the Louisiana led to the adoption of her engines as a model, and they were almost copied in building the machinery for the Chicago. The engines and furnaces had two features that provoked immoderate laughter among British engineers. The latter had a very poor opinion of beam engines at best, and beam engines attached to propeller shafts were something of a novelty even in this country. To make the matter still more complicated the beam had to work in most restricted quarters, because the machinery of the man-of-war must be below the protective deck, which is about the water line, for reasons of safety. The boilers were set in furnaces of fire brick very much as they would have been on land. English engineering authorities declared that if a beam engine on a propeller shaft below a protective deck and brick furnaces would work at all they had not learned the alphabet of their business. They did themselves and the Americans an injustice. They knew their business, but they did not know everything in it. The engines and boilers of the Chicago worked very well for several years. She began her career by a long cruise about the world, and being a very popular ship with commanding officers she has been kept in commission as a flag ship most of her existence. The engines have given some trouble, but not much, and the difficulty that has from the first been found in the boilers had nothing to do with the brick furnaces, which astonished English engineers by not falling down. The bricks never loosened. On the whole the engines and boilers have caused much less trouble than the machinery of several English warships, where in a number of instances weights have been reduced to the point of weakness and boiler-leaking has gone so far as to practically disable the vessel.

The engines of both steamers, the merchantman and the man-of-war, wore out, and at the same time the superiority of newer machinery made them relatively expensive to operate. The triple expansion engine became almost obligatory in marine engines and the use of water tube boilers increased. The Louisiana's engines were replaced three years ago by the vertical, triple expansion engines, and furnaces and boilers that afforded greater power with less fuel, and she has increased her speed record. The Chicago is now at the Brooklyn navy yard receiving her new engines, which are also of the triple expansion type, but as they must be got for safety beneath the protective deck they are horizontal instead of vertical. The objection to the horizontal engine and the reason why a vertical engine was originally placed in this ship is that in the horizontal engine the weight of the piston head wears the lower side of the cylinders, but in the new engines this is nearly or wholly obviated by the support of the piston rod and its extension. The cylinders of the Chicago are larger than those of the Louisiana, the diameters of the high pressure, intermediate and low pressure cylinders of the two steamers being respectively 33½ and 24 inches, 50½ and 39 inches, 76 and 64 inches. The stroke is 40 inches in the Chicago and 45 in the Louisiana.

Some of the contrasts between the old and the new engines of the Chicago are shown in the following table:

	Old.	New.
Steam pressure, in pounds.....	90	180
Grate surface, square feet.....	672	633
Heating surface, square feet.....	19,950	26,552
Horse power with forced draught.....	*5,083	†9,000
Speed with forced draught, knots.....	*15	†18½

*Actual. †Estimated.

The introduction of six water tube boilers accounts for the great increase in the heating surface. With all this increased power it is expected that the weight of the new machinery will fall 200 or 300 tons below that of the old; the omission of 6,000 fire brick for each furnace will account for some of this, and the progress in steel making in the last few years has made it possible to save a good deal of weight by substituting steel for cast iron. The Chicago will carry 918 tons of coal, and will make thirteen knots an hour with her Scotch boilers alone.—Commercial Bulletin, New York.

Improvements in Pumping Machinery.

The Consolidated Association of Marine Engineers, a New York organization made up some time ago from branches of the Marine Engineers' Beneficial Association, is composed of engineers who are employed aboard vessels, but some of these men find time to attend meetings at which papers on practical subjects pertaining to their calling are read and discussed. At a recent meeting of this kind the subject was a paper on "Recent Improvements in Pumping Machinery for Marine Service," by John A. Drew. "There is no branch of steam engineering" Mr. Drew said, "that presents so many difficult problems, or such exacting conditions of service, as that of marine engineering. The engineer's constant contact and practical knowledge of the troubles encountered naturally give him a clearer understanding of what is really required to improve the general efficiency of the machinery of the engine and boiler room, than any merely theoretical investigation ever can. It is hardly fifteen years since it was the general practice to drive the feed and bilge pumps by the main engine, and it was thought to be the only reliable method. To-day we find that the great thing desired by marine engineers is to have all the auxiliaries entirely independent, in order to free the engines of any other work than that of propulsion. The great steamships of the American line, the St. Paul and the St. Louis, were the first trans-atlantic ships to carry this idea to the fullest extent, and they have absolutely no pumps connected with the engines, the air, feed, bilge, circulating, fire and sanitary pumps being independent and driven by their own steam cylinders."

Mr. Drew explained that in consequence of the tendency just noted, the design and construction of auxiliary pumps for marine service has received a great amount of study and experiment during the last few years, and he then went on, with the aid of illustrations, to describe features of pumping machinery built by Henry R. Worthington of New York. The New York manufacturers have thought the paper worthy of publication and it has been printed in neat pamphlet form, with clear illustrations, for distribution among all engineers who may apply for it at any of the branch houses of Henry R. Worthington (Chicago, Cleveland and Detroit on the lakes) or at the main house in New York.

Speed and Cargo Records—Lake Freight Steamers.

Iron Ore—Coralia, Mutual Transportation Co. of Cleveland, 5,088 gross or 5,699 net tons, Gladstone to Ashtabula, draft of 16 feet 10 inches. From Lake Superior—Steamer Sir Henry Bessemer, Bessemer Steamship Co. of Cleveland, 4,637 gross or 5,194 net tons, Ashland to Conneaut, draft of 15 feet 9 inches.

Grain—Steamer Queen City, A. B. Wolvin of Duluth, 207,000 bushels of corn, equal to 5,796 net tons, Chicago to Buffalo, 16 feet 8 inches draft; steamer Zenith City, A. B. Wolvin of Duluth, 289,000 bushels of oats, Chicago to Buffalo. From Lake Superior—Steamer Queen City, A. B. Wolvin of Duluth, 185,000 bushels of wheat, equal to 5,550 net tons, Duluth to Buffalo on draft of 16 feet 1 inch; steamer Andrew Carnegie, Wilson Transit Co. of Cleveland, 182,000 bushels of wheat, equal to 5,460 net tons, Duluth to Buffalo on draft of 16 feet, even.

Coal—Steamer James Watt, Bessemer Steamship Co. of Cleveland, 5,550 net tons of bituminous coal, Cleveland to Duluth, on draft of 15 feet 4½ inches; steamer Andrew Carnegie, Wilson Transit Co. of Cleveland, 4,997 net tons of bituminous coal, Cleveland to Sheboygan, draft of 15 feet 2 inches.

Speed—Owego, Union Line of Buffalo, Buffalo to Chicago, 889 miles, 54 hours and 16 minutes, 16.4 miles an hour; Centurion, Hopkins Steamship Co. of St. Clair, Mich. Buffalo to Duluth, 997 miles, 65 hours and 10 minutes, 15.3 miles an hour.

The secretary of war has awarded contracts for supplying 12-inch disappearing gun carriages, six to the Bethlehem Iron Co. at \$15,000, and six to the Niles Tool Works of Ohio at \$15,000.

The Marine Review has prepared in neat oak frames cards containing the schedule of time required to be run between certain points in the St. Mary's river under the speed limit of seven miles an hour. When hung in a pilot house, distance and time may be readily noted from these cards, as the type is large. They will be sent by express to any address at \$1 each, or may be had upon application at 409 Perry-Payne building, Cleveland, for 65 cents each.

From the Magnolia Metal Co.

Editor Marine Review:—We beg to inform you that the firm of Sugden, Pound & Wagner of London, (former selling agents for Magnolia metal in Europe and who traded under the name of the Magnolia Anti-Friction Metal Co. of Great Britain by special permission of our company) have been dispossessed of their agency by the English courts and that our London office and our foreign business are now under the management of Mr. Chas. B. Miller, the president of this company. We beg also to inform you that Messrs. Sugden, Pound & Wagner were recently perpetually enjoined, together with the Atlas Metal Co., Limited, of London, John Sugden, Max Wagner, Arthur George Brown, The Globe Engineering Co., Limited, of Manchester, the Atlas Bronze Co., Limited, and the Atlas Bronze Co. from continuing the fraudulent business of making an anti-friction metal and branding it with the trade mark of the Magnolia Metal Co. of New York, imitating their ingots, marking the boxes in which the metal is packed "Made in the United States," and otherwise deceiving and imposing upon purchasers of anti-friction metal in Great Britain and Europe. Justice Collins heard this case, and gave judgment against Sugden, Wagner, Brown, the Globe Engineering Co., Limited, and others for selling counterfeit goods and deceiving the public by representing that the goods they sold were made in the United States by the Magnolia Metal Co. An appeal was taken from the injunction above referred to. This appeal was tried before the court of appeals, Lord Esher presiding, and the perpetual injunction granted by Justice Collins was confirmed. It was in this trial that Lord Esher denounced the action of the parties above named and characterized their performance as "a disgusting fraud."

It has come to our notice that parties in this country have attempted to perpetrate a similar fraud, and we now have one western firm in the courts over this matter, and we desire through your columns to warn the engineers and the general public, users of anti-friction metal, against fraudulent attempts to pirate and appropriate the use of our trade marks and name of our metal. Every bar of Magnolia metal bears the steel stamp of the Magnolia flower and the impression of the steel die "Patented June 3d, 1890" and "Manufactured in the United States," with the exception of the metal manufactured by this company in Russia, which bears the stamp of the Magnolia flower and the words "Manufactured in Russia." Will you kindly publish this letter and help in that way to give publicity to the facts set forth and thereby protect, in some measure, American manufacturers who are being wronged by foreign as well as domestic competitors?

Magnolia Metal Co.,

E. C. Miller, Vice-President.

New York, May 11, 1897.

An Increasing Coal Business.

The Cuddy-Mullen Coal Co. announce that they are about to undertake shipments of coal and a steamboat fuel business at Erie on the Pennsylvania Co.'s docks, where there is now being erected a car dumping machine that is to be a duplicate of the one in operation at the plant within the east arm of the breakwater at Cleveland. With the addition of the Erie plant this company will certainly be operating in the coal business from one end of the lakes to the other. Their facilities include, in the cargo department, car dumping plants at Erie and Cleveland, while for steamboat fueling they will have: At Erie, a car dumping machine; at Cleveland, a car dumper, eight pockets of 1,000 tons capacity, three steam derricks and a steam lighter; on the Detroit river, four pockets and three steam derricks at Amherstburg, and at Sandwich ten pockets and two steam derricks; on the Sault river, two docks at Detour equipped with pockets and steam derricks.

An excellent chart of Green bay and approaches, on a large scale has just been published by the United States hydrographic office and may be had from the Marine Review. The chart is corrected to March 1, 1897, and takes in with Green bay the west shore of Lake Michigan from Manistique to Kewaunee. It will be of great value to masters of Lake Michigan trading vessels, as well as the men in charge of the larger ore and coal carriers trading to Escanaba. Soundings are in feet and there is a scale of statute miles attached. The price is \$1.25, but the chart is so complete in detail that it is larger than the single sheet charts of Lake Superior or Lake Michigan.

Trade Notes.

John Dialogue & Son of Camden, N. J., have secured the contract for New York's new fire boat. This latest fire fighter for the harbor of the metropolis is to cost \$57,000.

The Chase Machine Co. of Cleveland now has two of its steam steering engines in use, one on the tug C. A. Morgan and the other on the tug Ben Campbell. A third machine is being fitted on the steamer Nahant, and two others for the tugs L. P. Smith and Thomas Gregory are under construction.

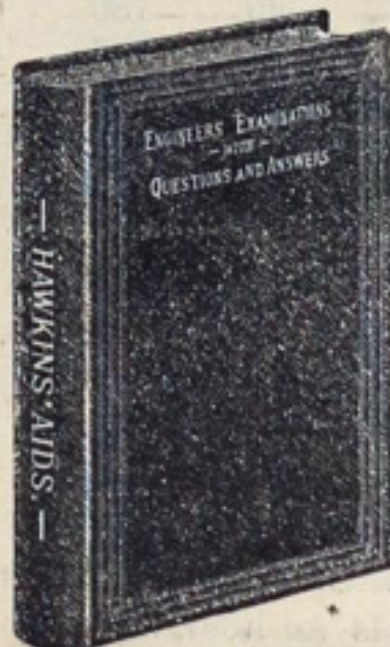
A telegram from Boston announces that the bill in equity brought by the Consolidated Safety Valve Co. against the Ashton Valve Co. in the United States circuit court, for an injunction to restrain the defendants from the alleged infringement of a patent for steam safety valves, granted Jan. 19, 1869, to George W. Richardson, was dismissed. The court holds that the proper construction of the Richardson patent requires that the aperture at the ground joint caused by lifting the valve should always be greater than the aperture for the exit of steam into the open air. The defendant's valve does not embody this construction, and the court holds that it does not infringe upon the plaintiff's patent.

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An artistic brochure entitled "Summer Outings" is published by the Nickel Plate road, describing vacation resorts along that line. Address B. F. Horner, general passenger agent, Cleveland, O., for a copy. 55 Jul 15

U. S. ENGINEER OFFICE, TELEPHONE Building, Detroit, Mich., May 10, 1897. Sealed proposals for improving Detroit River, Mich., by removal of Boulders, Bed-rock, or other material from Ballard's Reef Channel, will be received here until 12 o'clock noon (Standard time), June 1, 1897, and then publicly opened. Information furnished on application. G. J. LYDECKER, Lt. Col. Engrs. June 1

TREASURY DEPARTMENT, OFFICE OF General Superintendent U. S. Life-Saving Service, Washington, D. C., May 7, 1897. Sealed proposals will be received at this office until 2 o'clock P. M. of Thursday, the 3rd day of June, 1897, for furnishing supplies required for use of the Life-Saving Service for the fiscal year ending June 30, 1898; the supplies to be delivered at such points in New York City, Grand Haven, Mich., and San Francisco, Cal., as may be required, and in the quantities named in the specifications. The supplies needed consist of Beds and Bedding, Blocks and Sheaves, Cordage, Crockery, Furniture, Hardware, Lamps, Lanterns, etc.; Lumber, Medicines, etc.; Paints, Oils, etc.; Ship Chandlery, Stoves, etc.; Tools, and Miscellaneous articles; all of which are enumerated in the specifications attached to the form of the bid, etc., which may be obtained upon application to this office, or to the Inspector of Life-Saving Stations, 24 State Street, New York City; Superintendent Eleventh Life-Saving District, Grand Haven, Mich.; and Superintendent Twelfth Life-Saving District, New Appraisers' Stores, San Francisco, Cal. Envelopes containing proposals should be addressed to the "General Superintendent U. S. Life-Saving Service, Washington, D. C.," and marked on the outside "Proposals for Annual Supplies." The right is reserved to reject any or all bids, and to waive defects, if deemed for the interests of the Government. S. I. KIMBALL, General Superintendent. May 21



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"Hand-Book of Calculations for Engineers," 2.50

A list of country homes along the south shore of Lake Erie open to summer boarders will be mailed to any one enclosing a two cent stamp to B. F. Horner, general passenger agent of the Nickel Plate road, Cleveland, Ohio.
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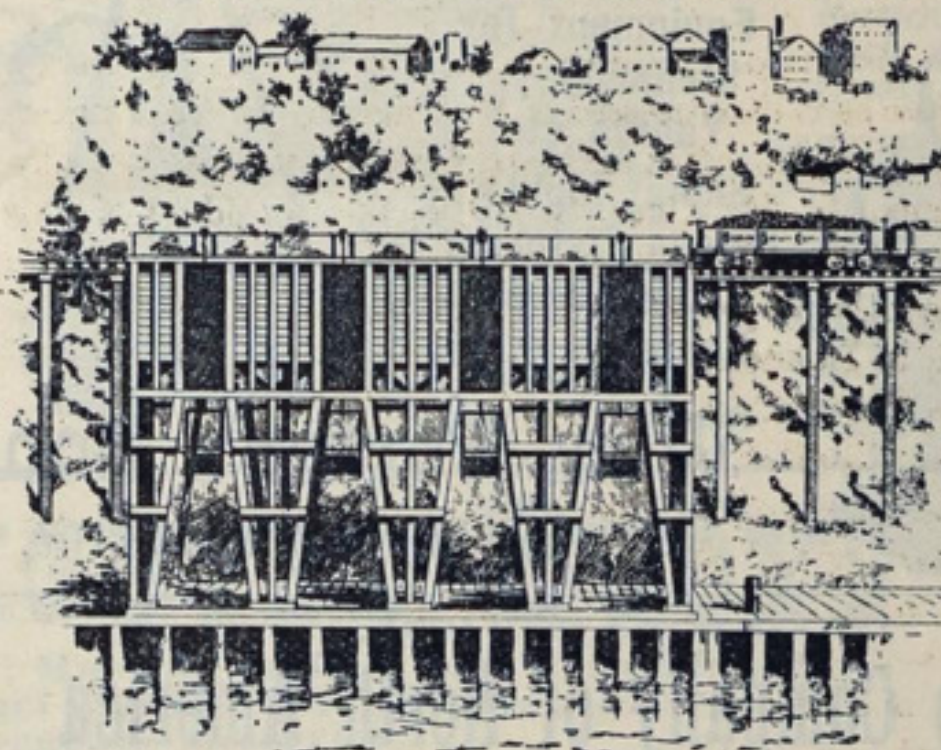
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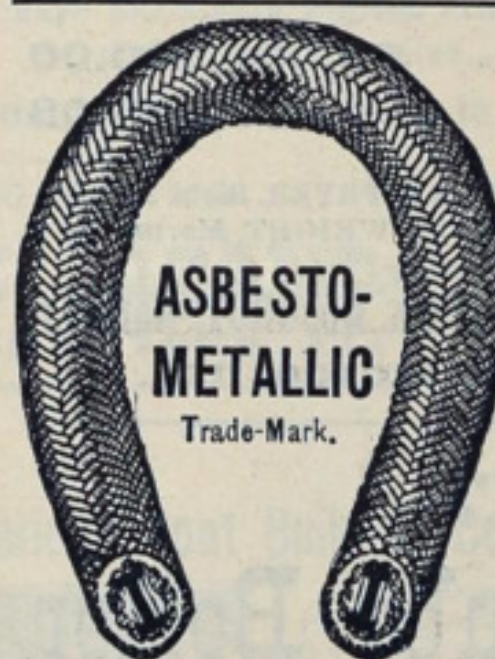
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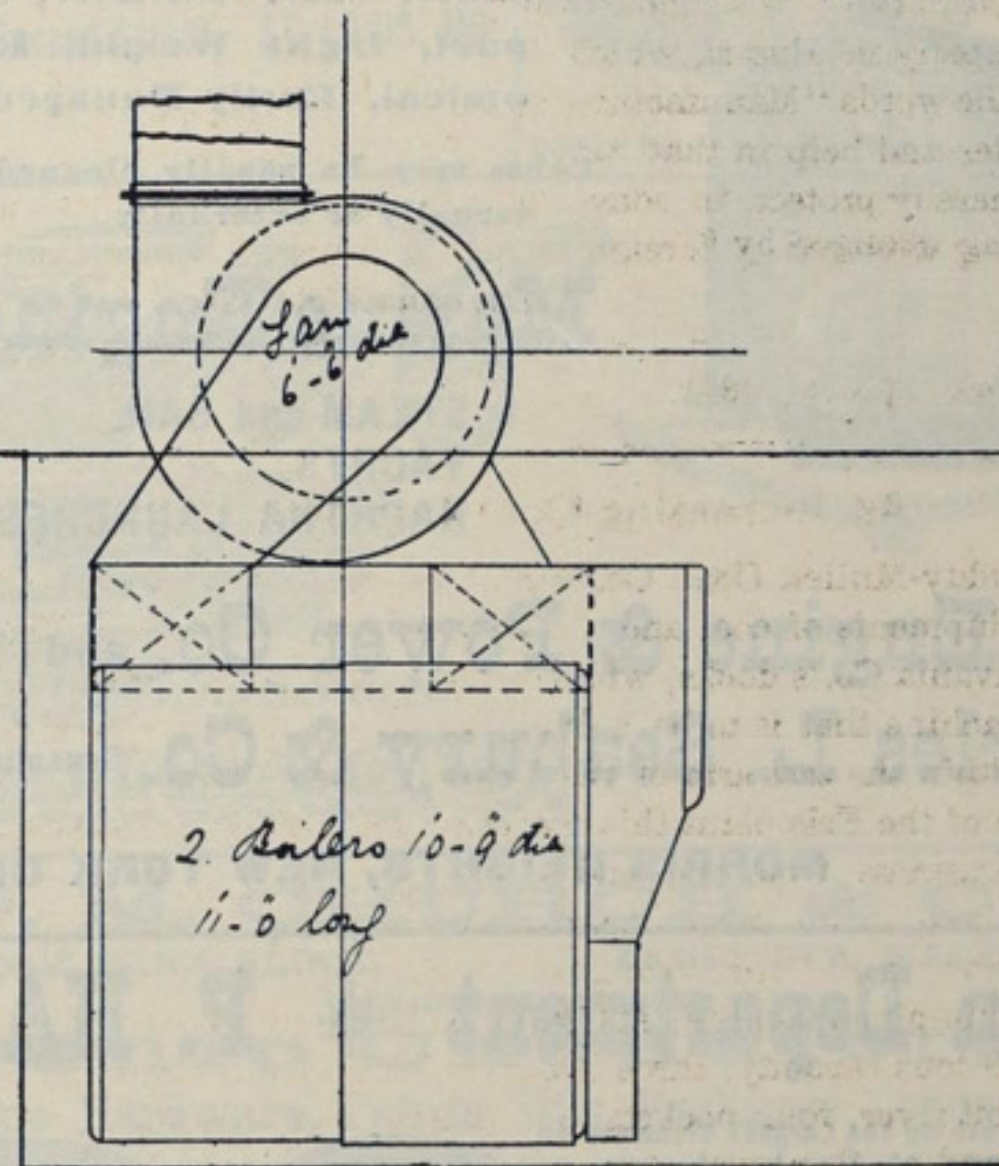
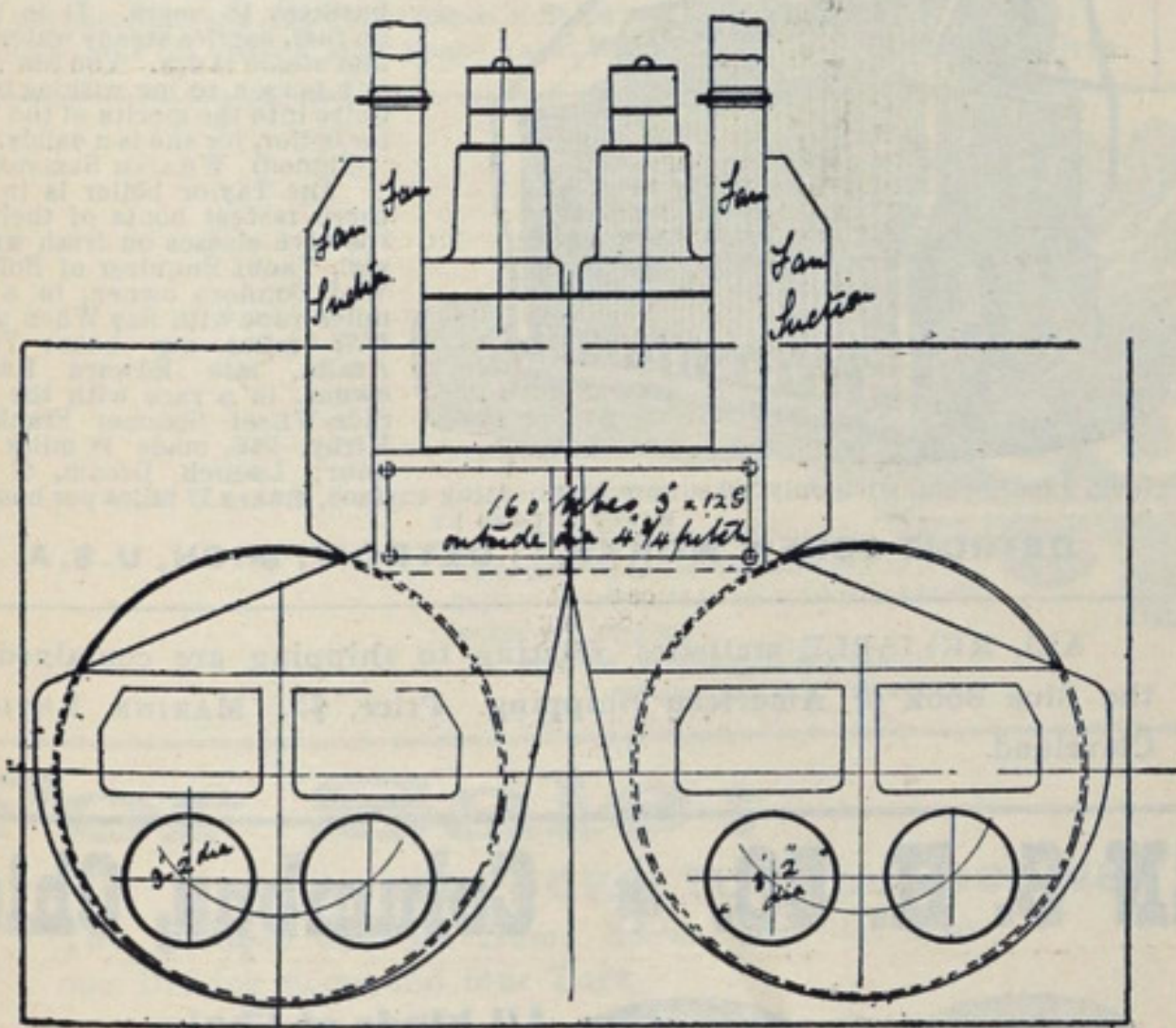
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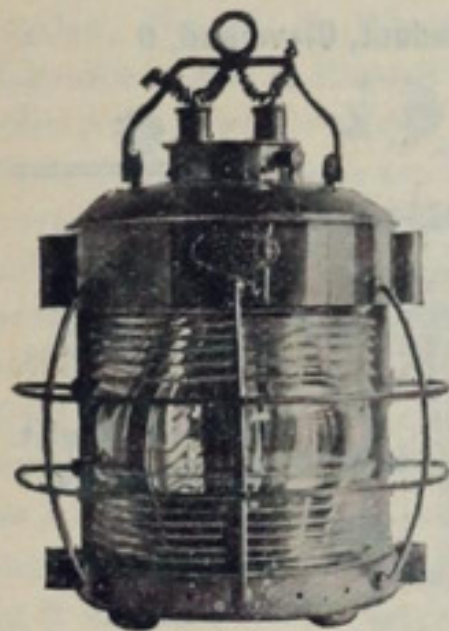
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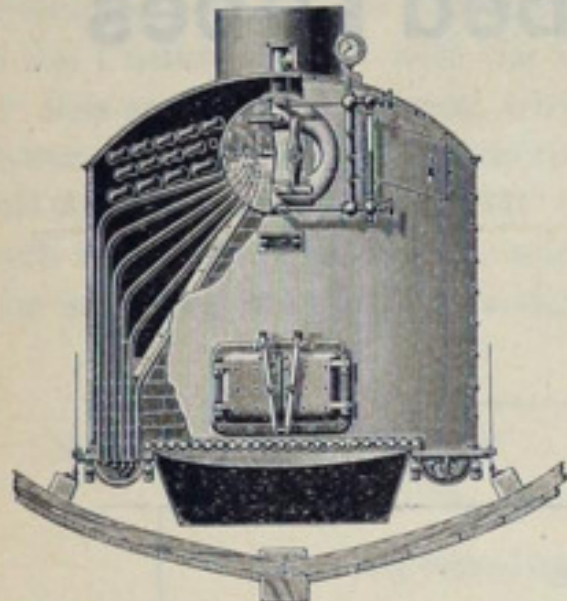
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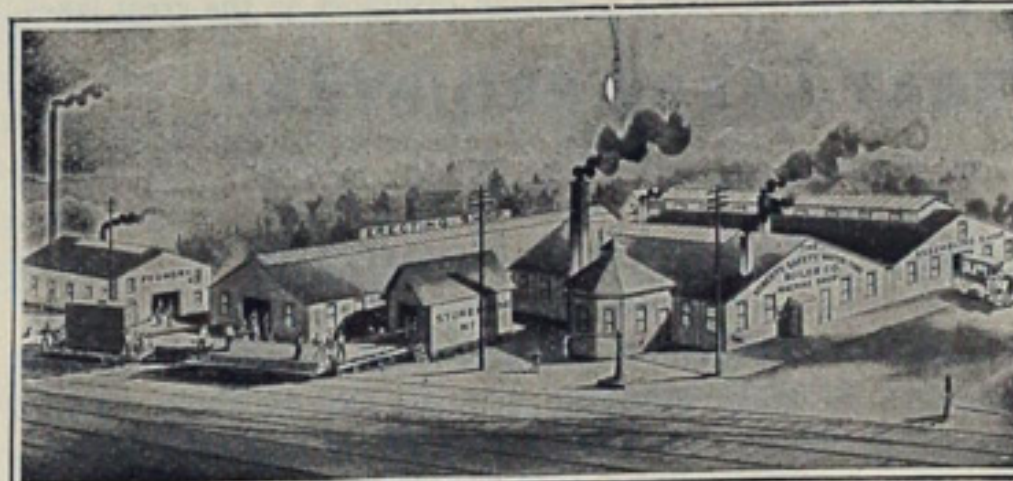
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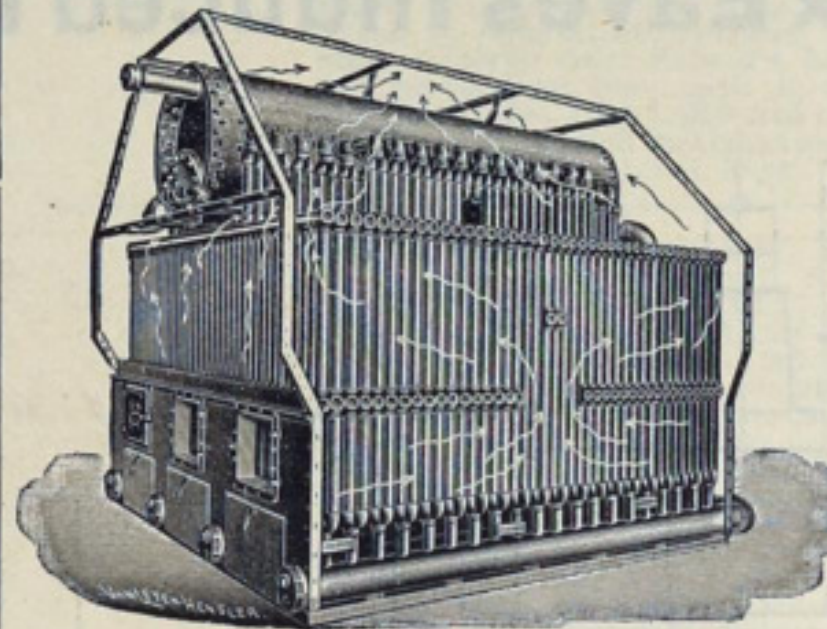
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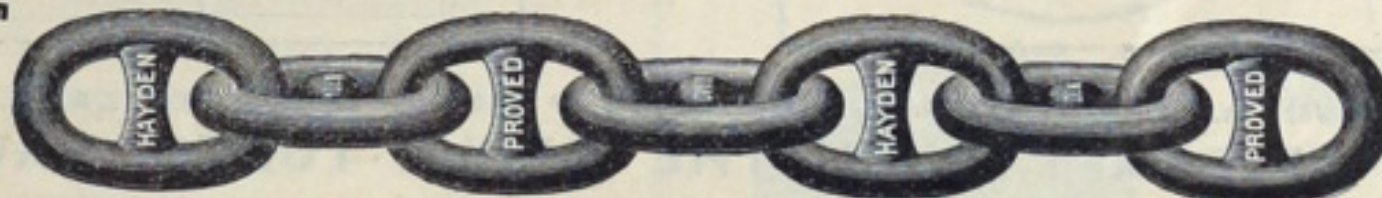
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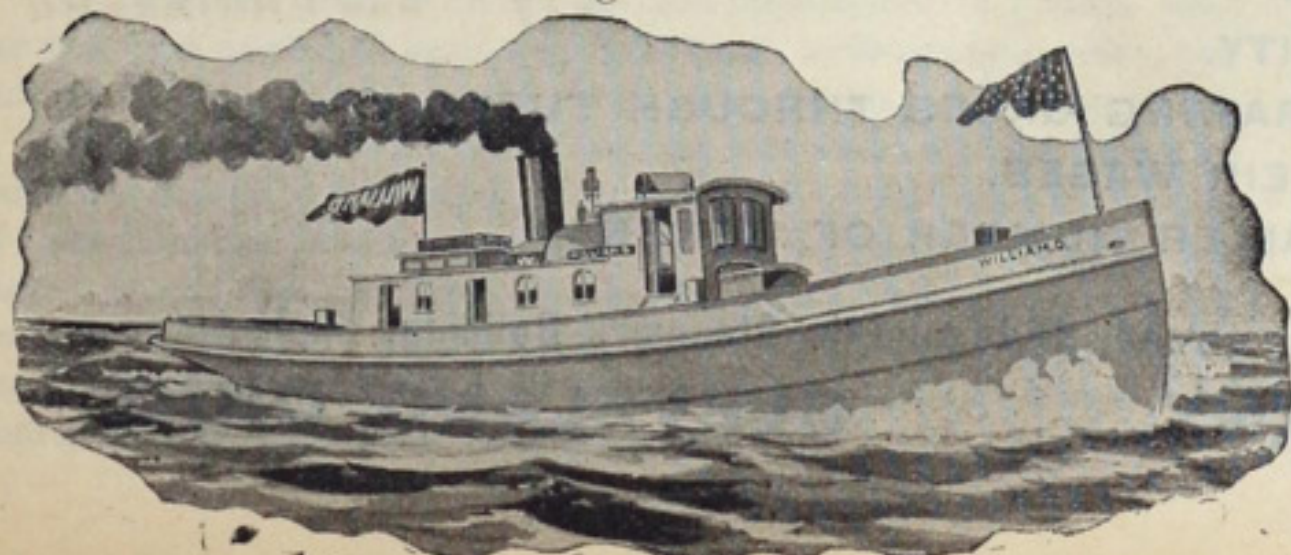
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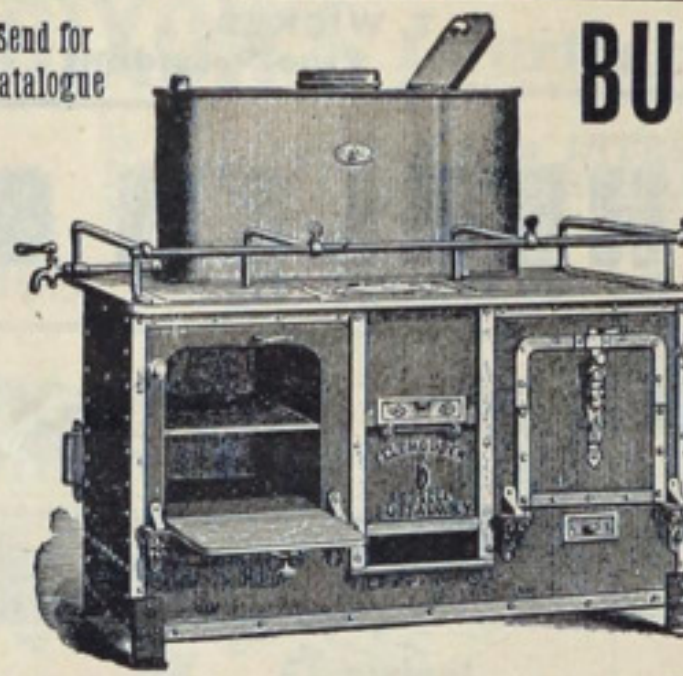
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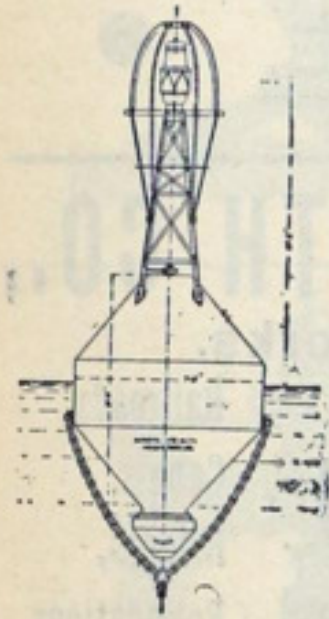
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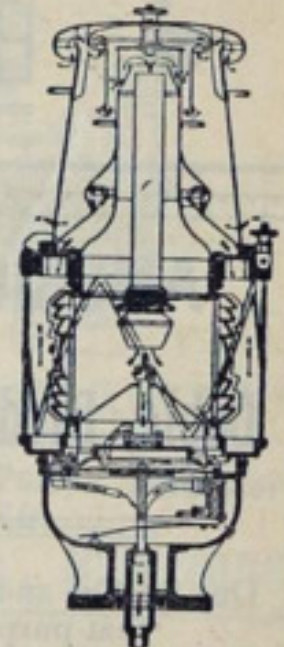
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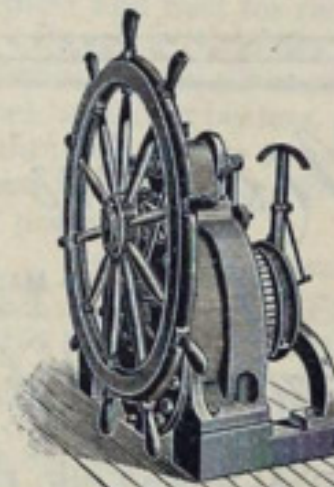


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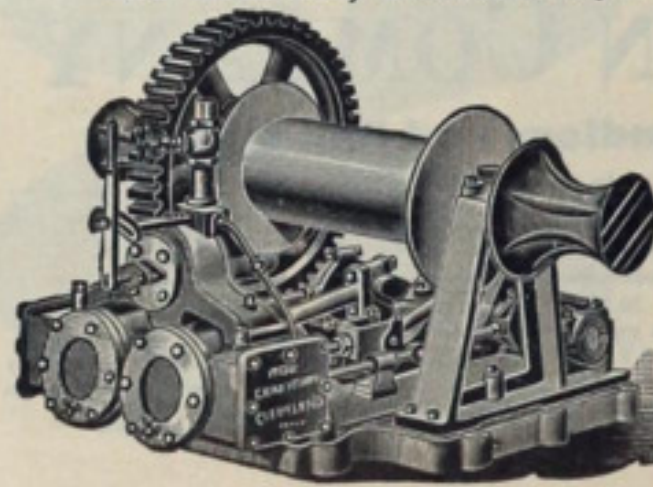
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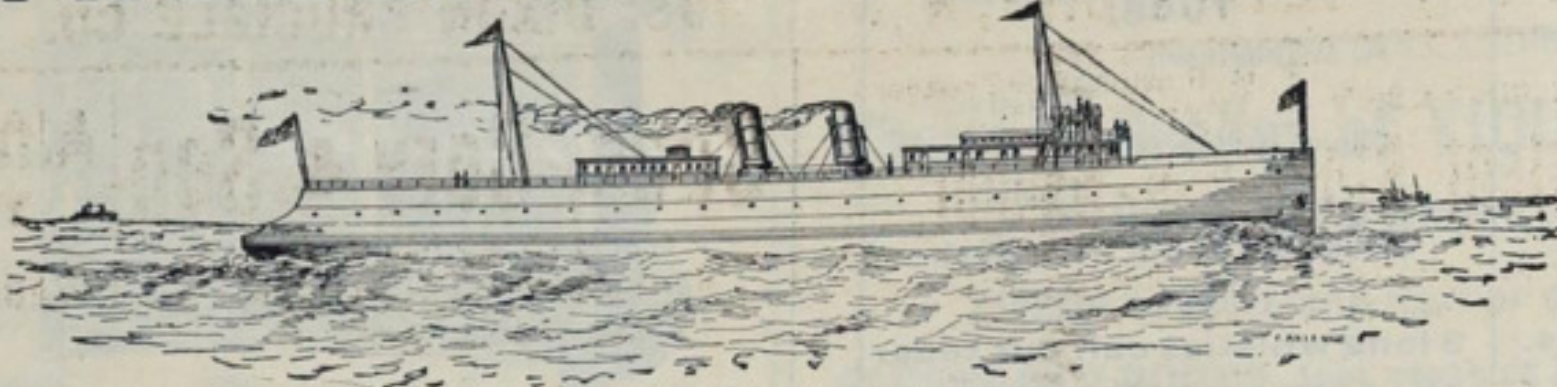
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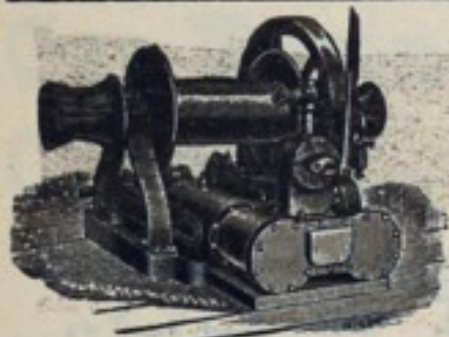
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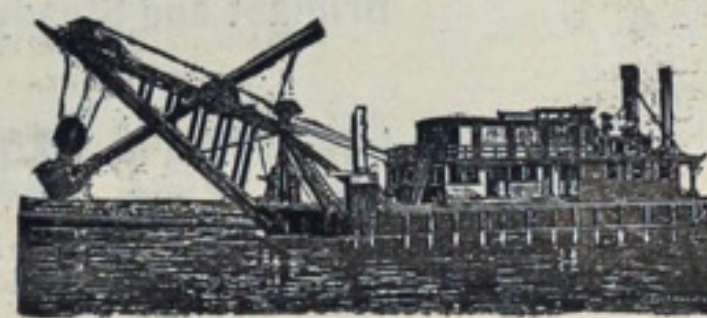
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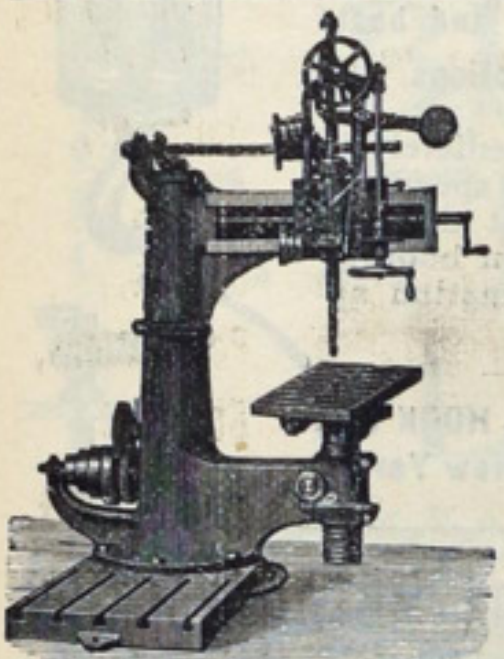
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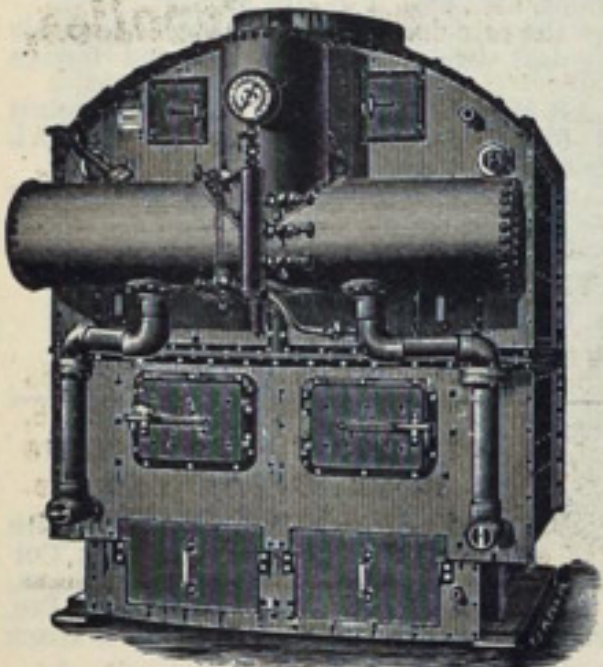
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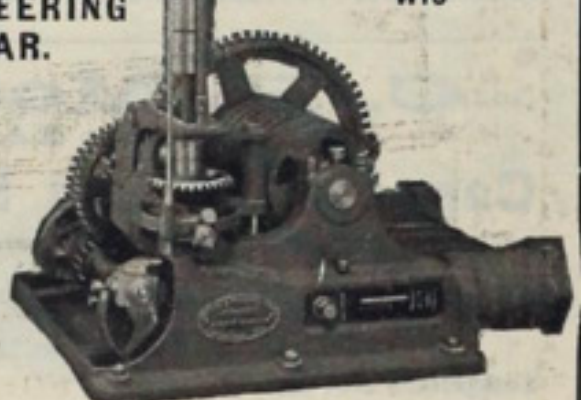


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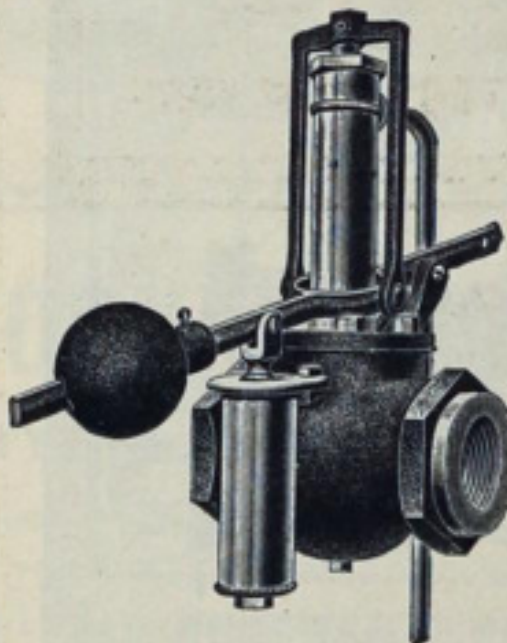


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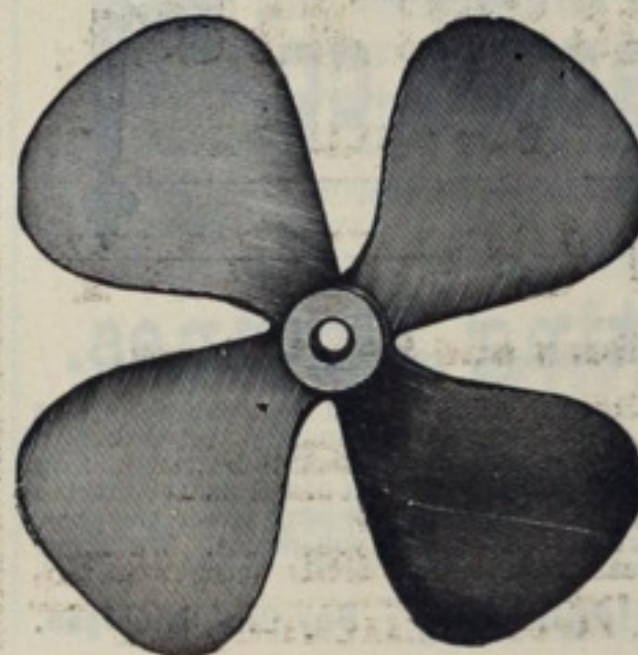
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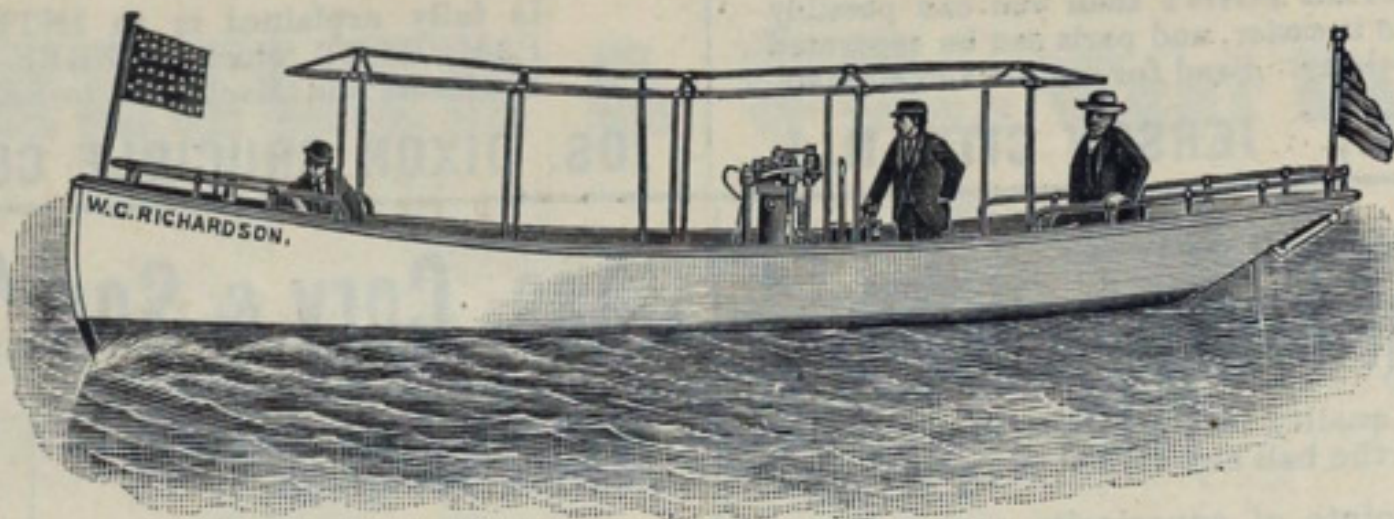


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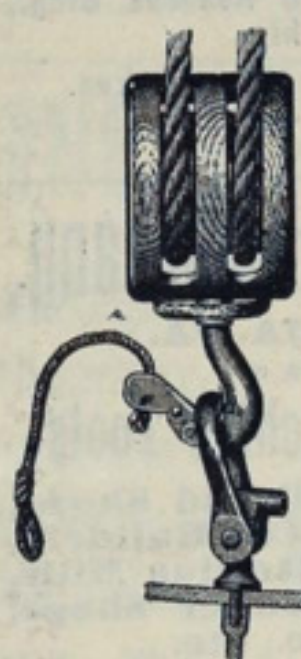
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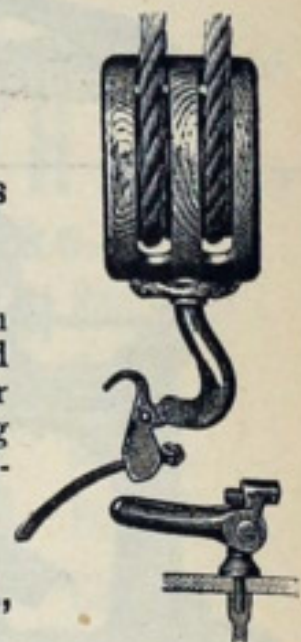


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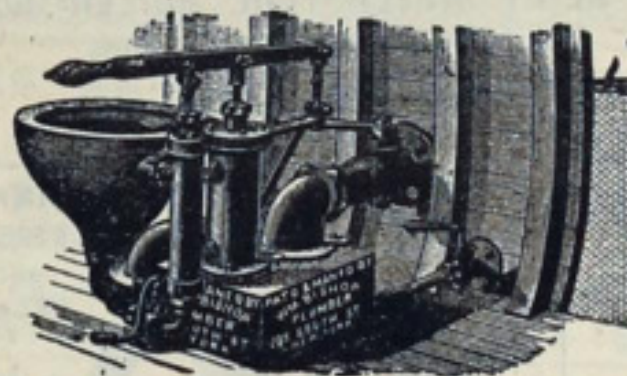
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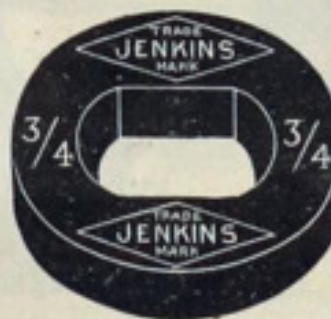
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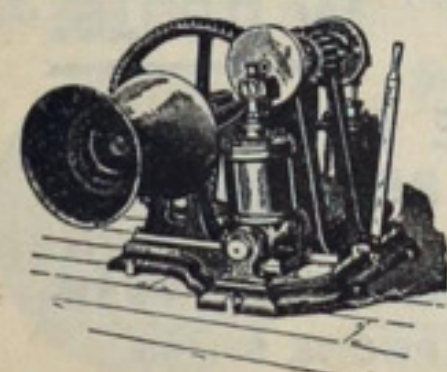
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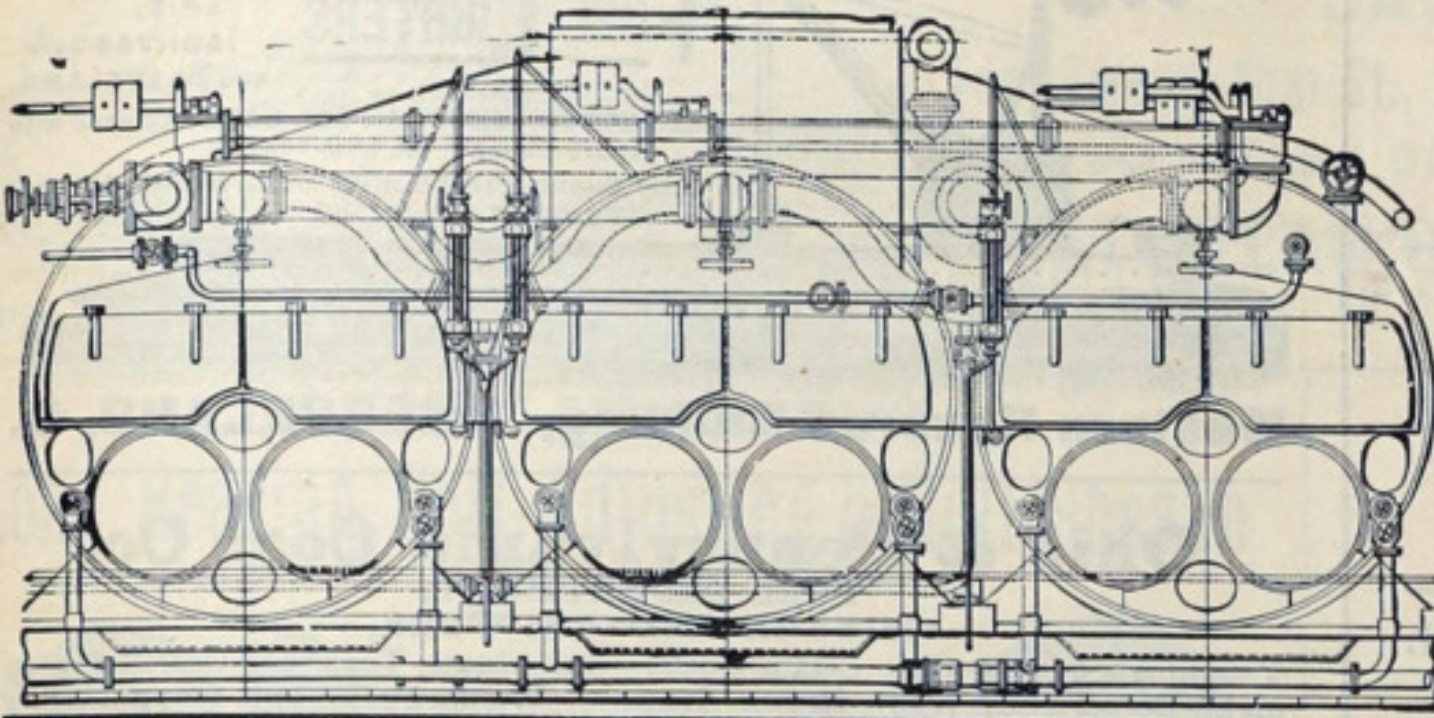


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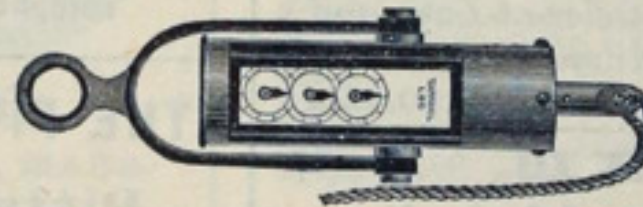


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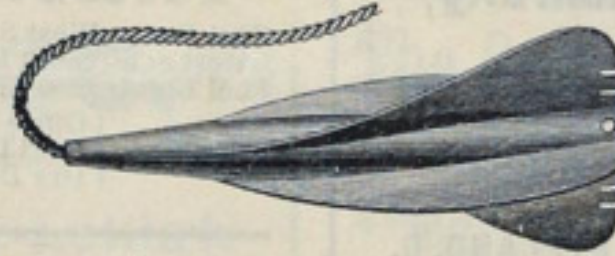
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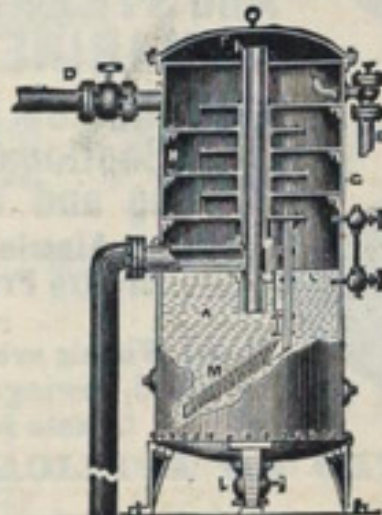
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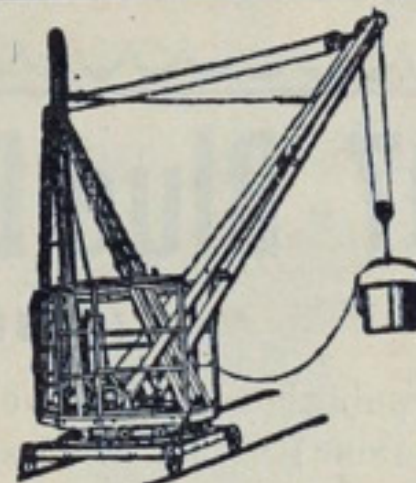
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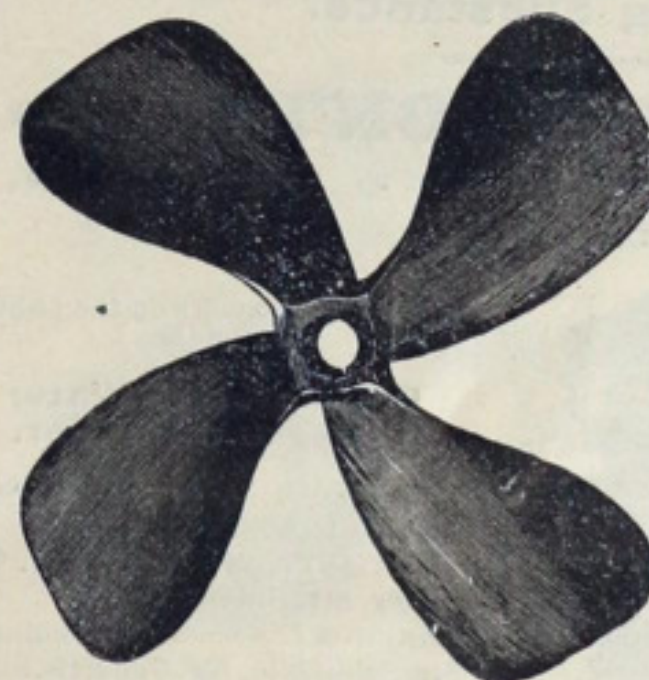
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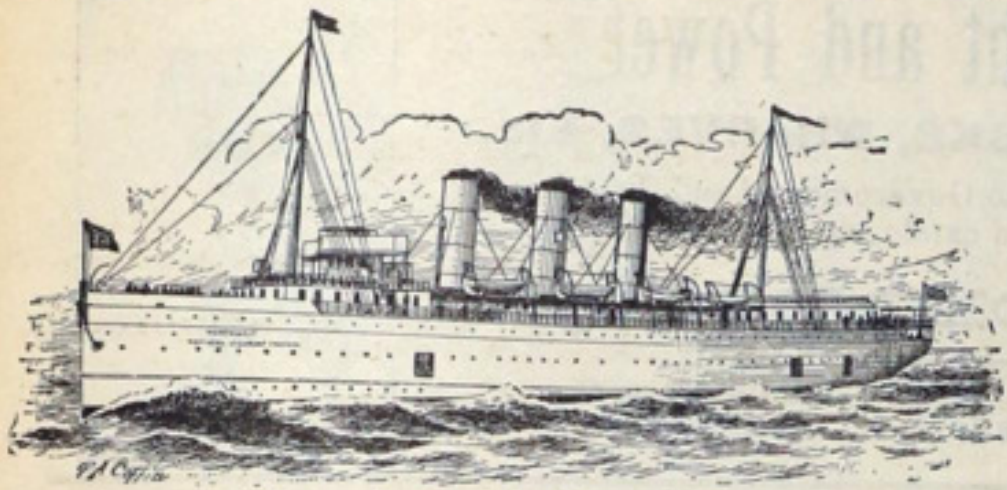


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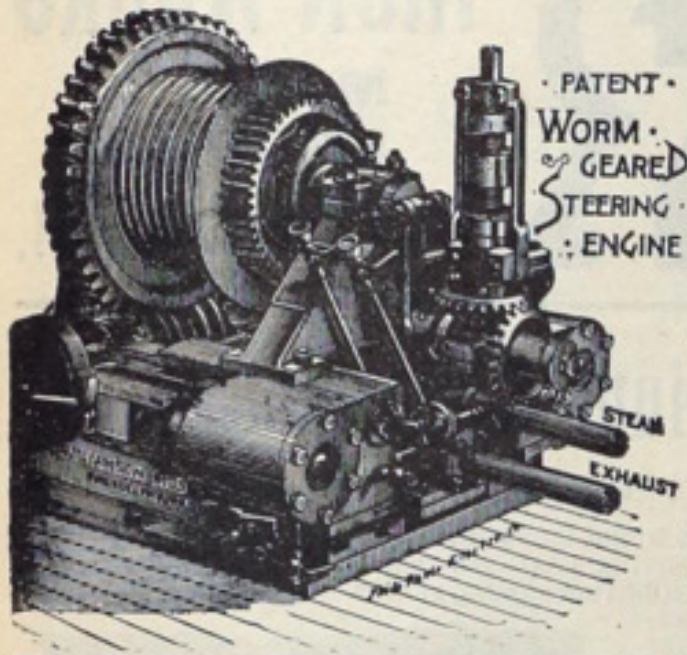
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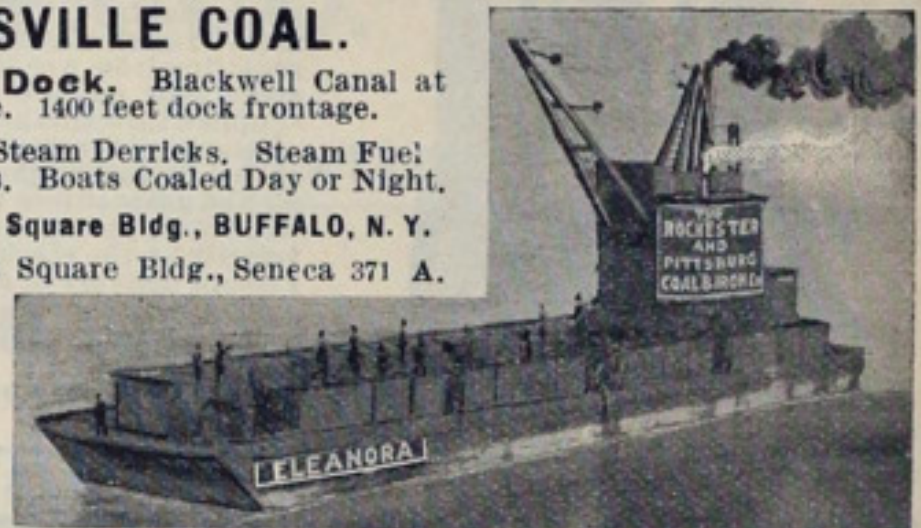
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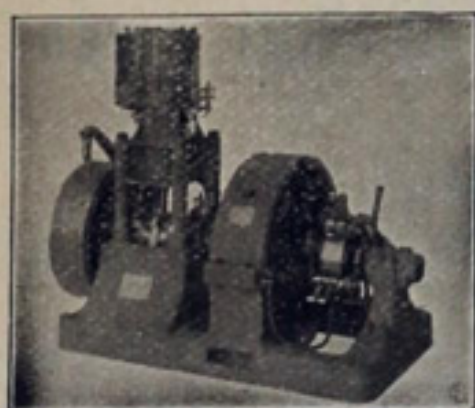
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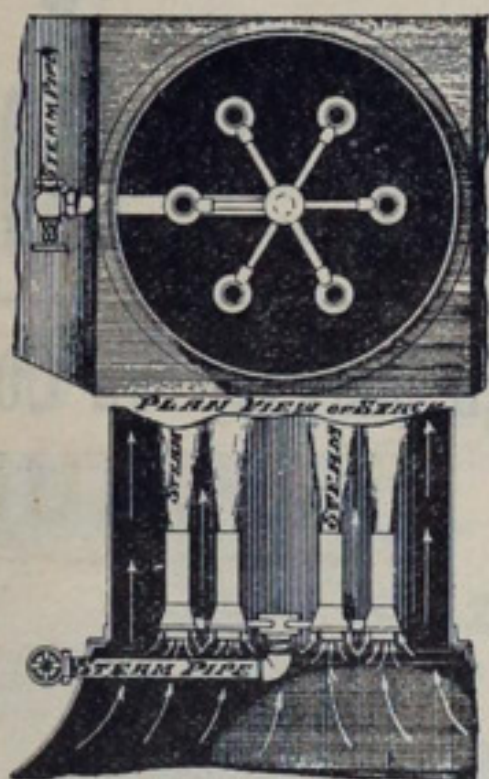
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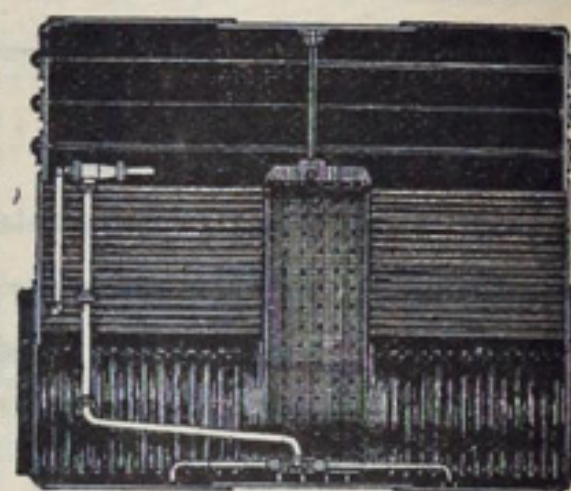
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Contractors for High Class Steam Fitting, Steam Heating,
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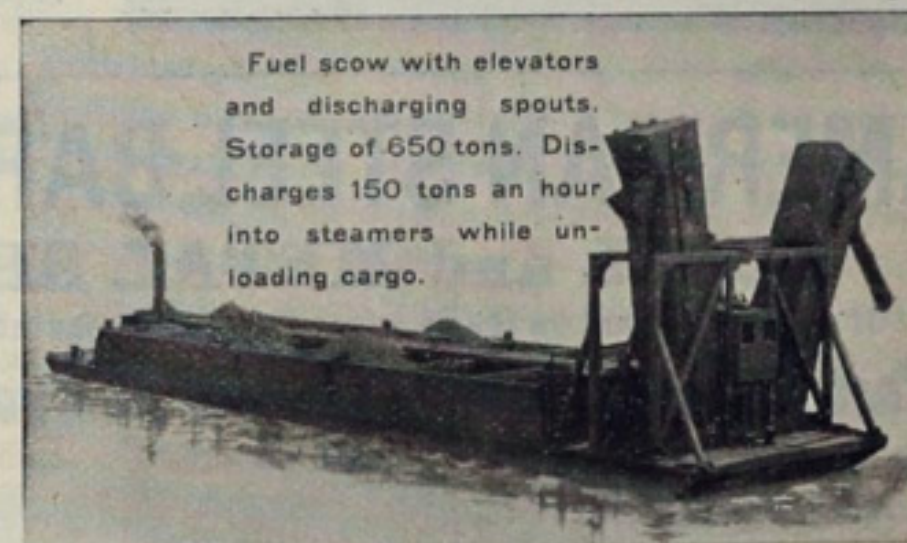
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Fuel scow with elevators
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Storage of 650 tons. Dis-
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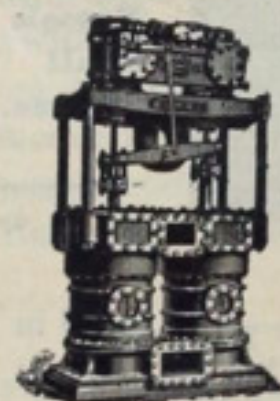
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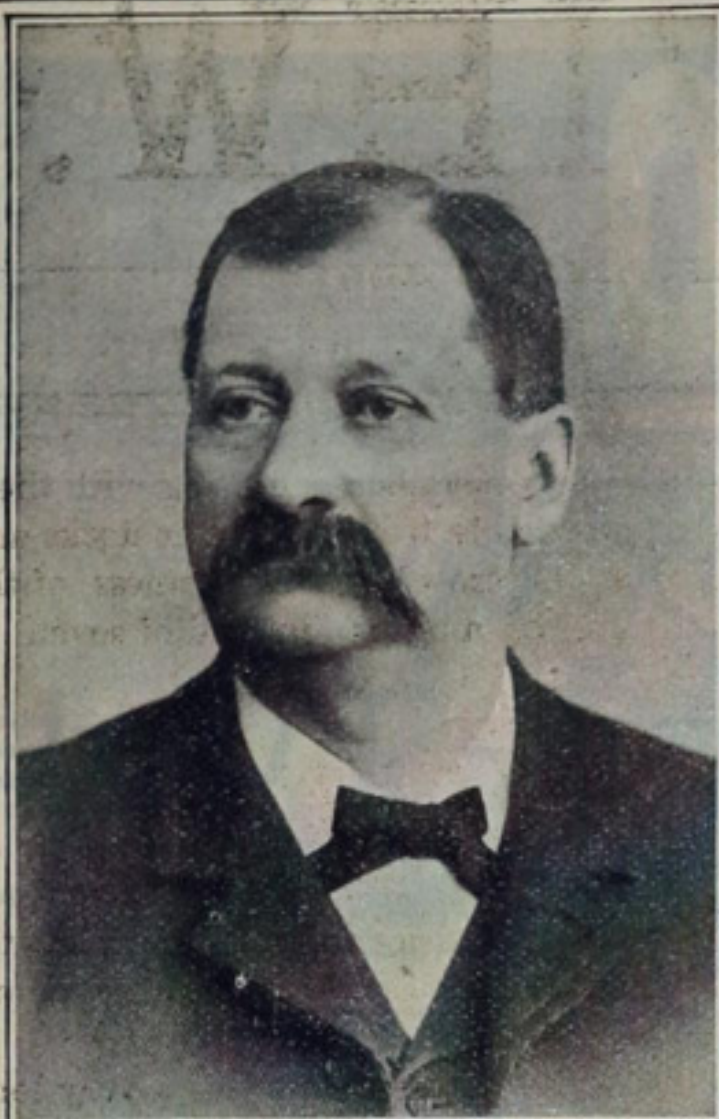
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Single and Duplex Pumps for Boiler Feed,
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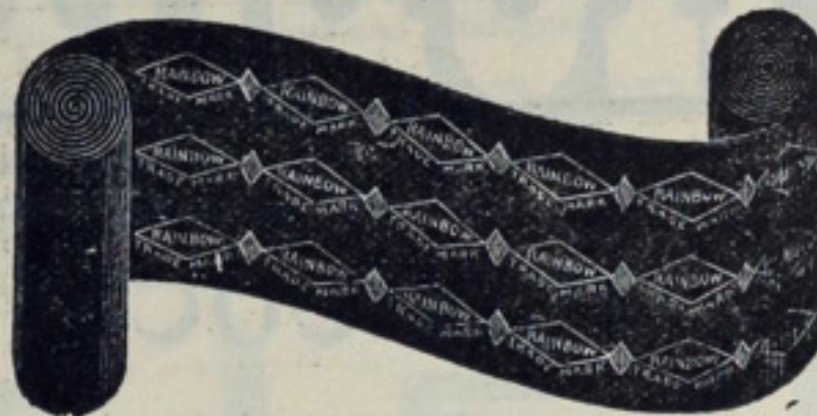


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The inventor of and the only man in the world who can make

RAINBOW PACKING.

Thousands of
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No Equal.
Will Hold
Highest Pressure.



Don't have to use
wire and cloth
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RAINBOW.
Can't blow it out.

LOOK OUT FOR IMPOSTERS.

Commencing Dec. 1st, we use Three Rows of DIAMONDS IN BLACK extending throughout the entire length of each and every roll.

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Telephone 1616.
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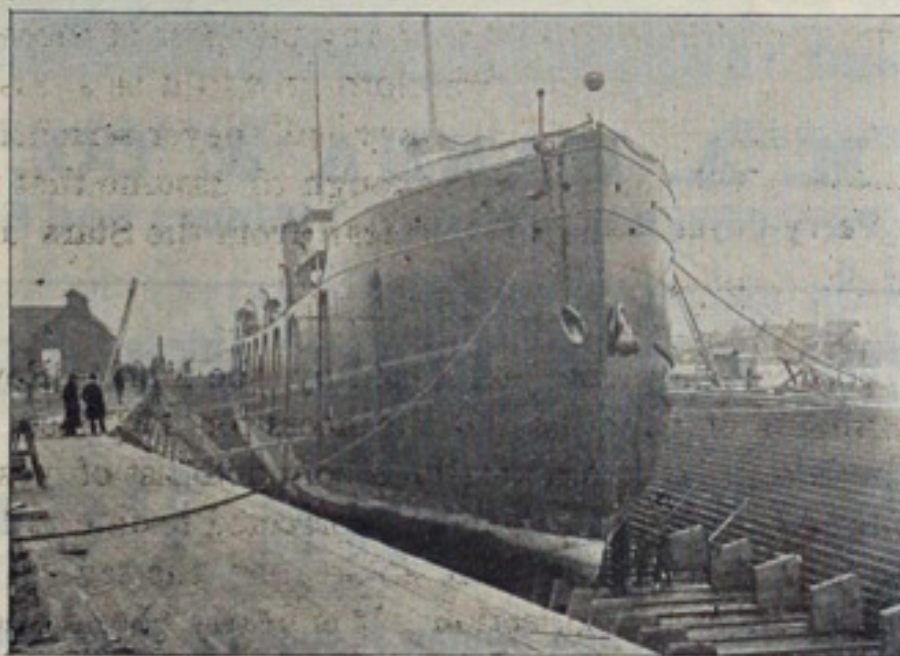
Dimensions of Dock:
Lth. over all, 360 ft.
Lth. on blocks, 340 ft.
Width of gate, 50 ft.
Depth over sill, 20 ft.

Capt. W. W. BROWN,
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AMERICAN STEEL BARGE CO. STEEL and METAL SHIPS

Of all classes built on the Shortest Possible Notice at our yards at
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Always
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Ships in
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Time.



Best
Quality
of Oak
in stock
for Re-
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Vessels
of all
Classes.

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Length, extreme.....537 feet.	Entrance, Top.....55 feet 9 in
Breadth, Top.....90 " 4 in.	Entrance, Bottom.....50 "
Breadth, Bottom.....52 "	Depth over Sills.....18 "

LARGEST DRY DOCK ON THE LAKES.

Prices for Repairs and Docking same as at lower lake ports

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A number of Propeller Wheels in stock at Dry Dock.

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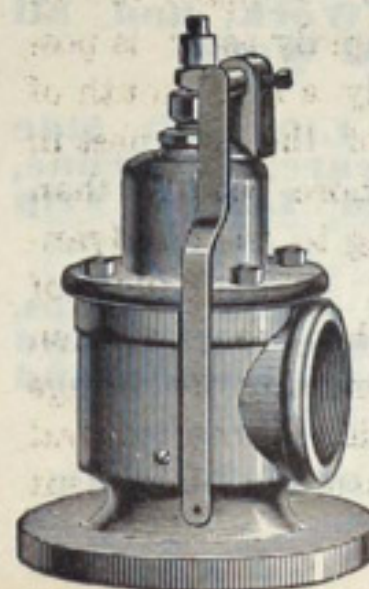
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The Original SINGLE BELL CHIME WHISTLES.
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BOSWORTH FEED-WATER REGULATOR, PATENT GAGE TESTER, and many other specialties in Steam Lines.

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